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14th April 2023

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Unit 5
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Re: Phase 2 Geo-Environmental and Geotechnical Summary Letter Report for Jersey Wharf, Manchester

1.0 Introduction

Curtins Consulting were instructed by Manchester Life to undertake a further ground investigation at Jersey Wharf, Manchester, M4 6JW following the vacancy of the building on-site.

The site is currently unoccupied, with the area in the east comprising fenced, vacant land and the west by a warehouse building previously occupied by Easy Equipment. The remainder of the site is occupied by tarmac car parking and a container. The site is bound by Jersey Street to the north and the Rochdale Canal to the south.

The ground investigation was undertaken to provide supplementary information following previous investigations undertaken by E3P 2019 and Curtins 2021, to determine the ground conditions pertaining to the development site, and to aid contamination risk assessment and foundation design.

The proposed development on site comprises a construction of several structures comprising residential high-rise buildings with some commercial use to the ground floor.

This letter report is to provide information gathered to date to aid with design and the interpretations within are to be used as guidance.

2.0 Background Information

A residential development with some commercial aspects is proposed at a plot of land known as 'Ancoats Plot C', located off Jersey Street, Manchester, M4 6JW. The site location plan is presented in Figure 1, overleaf.

Mapping from 1840s-1960s shows the 'Jersey Street Mills (Cotton)' and 'Jersey Street Dwellings' located within the western portion of the site, and the 'Prussia Street Coal Wharf' located within the east. This mapping also shows that a former canal arm ran through the centre of the site in a NW-SE direction before joining to the main canal, before being infilled in the mid-20th century. Mapping from the 1840s-1890s shows the 'City of Manchester Screw Bolt Works' with a chimney in the central-east of the site, noted as a 'Sheet Metal Works' from 1948, which later was noted as an engineering works. This configuration as an engineering works remained until the late 1990s when the site was demolished.

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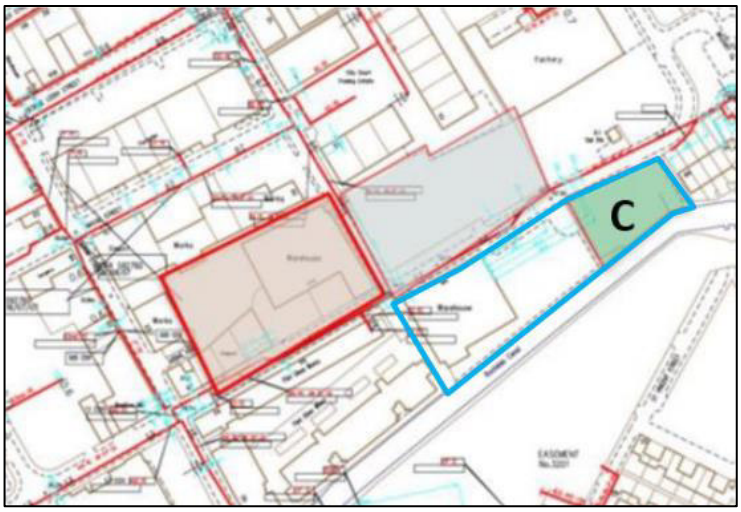

Figure 1 *– Site Location Plan (site boundary shown in blue).*

No Artificial Ground deposits are noted on BGS Mapping, but Made Ground is anticipated to be present on site considering the sites history of redevelopment including the infilling of a canal arm in the mid-20th century. The superficial deposits noted on site are Glacial Till, overlying bedrock: the Manchester Marls Formation (Mudstone) and Collyhurst Sandstone Formation as noted by the BGS. Available BGS exploratory hole logs located within 150m of the site generally indicate Made Ground overlying firm to stiff clay with occasional partings of silty sand, with mudstone bedrock encountered at 12.80m bgl.

The site is underlain by two bedrock aquifers; a secondary B Aquifer within the Manchester Marl Formation, and a Principal Aquifer associated with the Collyhurst Sandstone Formation. The site is not located within a Source Protection Zone and there are no active groundwater abstraction points located within 1km of the site.

The nearest surface water feature to the site is the Rochdale Canal, located along the southern boundary of the site. There are no recorded surface water abstraction points within 1km of the site, and there are no discharge consents within 250m of the site.

The risk from UXO associated with WWII bombing to future intrusive investigation works is considered to be **Moderate.**

The risk from Made Ground posed to the site's end-users and groundwater is considered to be **Moderate** / **Low** due to the anticipated lack of contamination in the Made Ground. The risk posed to surface water is considered to be **Low** due to the distance to the nearest surface water feature. The risk posed to site end-users from ground generating gases arising from organic / putrescible soils near the site is considered to be **Moderate**.

3.0 Historical Investigations

3.1 E3P Contamination Risk Assessment (2019)

The E3P Site Investigation undertaken in 2019 obtained 32 soil samples, which comprised of Made Ground and natural soils, used to undertake environmental chemistry testing. Samples were tested for a broad suite of contamination as identified in the E3P Phase II Report (Ref. 1).

3.1.1 Scope of Works

The site works consisted of the trial pits TP115, TP116 & TP117, window sample boreholes WS111 & WS112, cable percussion borehole CP106 to a maximum depth of 12.50m bgl.

Mechanically excavated trial pits were advanced to investigate ground conditions and to retrieve environmental samples. Window sample boreholes were advanced to undertake in-situ geotechnical testing, obtain environmental samples and to instal groundwater and gas monitoring wells. A cable percussion borehole was advanced to facilitate the investigation of deeper soil horizons (in excess of 5.00m bgl) with in-situ geotechnical testing to determine the relative densities of the granular soils and undrained strengths of clays.

3.1.2 Ground Conditions

A summary of the ground conditions encountered during the site investigation works is presented in *Table 3.2,* below.

Table 3.1.2 - *Summary of encountered ground conditions:*

Stratum	Depth to Top of Strata m bgl	Thickness (m)		Description
		Min	Max	
MADE GROUND	0.00	0.80	2.30	Black gravel with frequent cobbles with gravel of sandstone, ash, mudstone, concrete and brick. Brick walls were noted in TP117 at depths up to 2.30m bgl indicative of historic buildings.
SUPERFICIAL	0.80 – 2.30	0.20	10.70	Firm to very stiff brown slightly gravelly clay. An isolated area of brown clayey silt was identified in TP117.
BEDROCK[1]	10.30 – 12.50	-	2.20	Dense brown sandstone.

[1] This was corrected by the Curtins 2021 Ground Investigation, see Section 4.2 for ground condition depths, as this was likely to be a dense sand layer within the Glacial Till.

3.1.3 Groundwater

No water strikes were recorded within the exploratory boreholes during the ground investigation works, however groundwater was noted between 1.73m and 1.76m bgl during the groundwater monitoring visit.

3.1.4 Obstructions

Large obstructions including brick and concrete were encountered within exploratory hole locations. Brick walls were noted in TP117 at depths up to 2.30m bgl, indicative of historic buildings.

3.1.5 Observed Potential Contamination

An organic odour was noted within the silt deposits located between 2.30m – 2.80m bgl within TP117.

3.1.6 Ground Contamination

Environmental analysis on five Made Ground and three Natural soil samples for a broad range of contaminants recorded several exceedances above Residential thresholds with respect to arsenic, cadmium and PAHs. Chrysotile asbestos fibres were also positively identified in WS112 at 1.20m bgl, although quantitative analysis confirmed <0.001% which is low risk.

3.1.7 Recommendations

Based on site observations, laboratory tests, and the nature of the proposed development (high-rise apartments), shallow foundations were not considered suitable for the buildings and a driven or CFA piled foundation solution was recommended to support a pad or strip footing in order to form the building.

Ground bearing slabs are unlikely given the anticipated depths of Made Ground on site (>600mm) and shallow cohesive soils.

The report made the following recommendations:

- Completion of ground gas monitoring;
- Geotechnical earthworks strategy;
- Remediation and enabling works strategy; and,
- Further investigation of the western area of Plot C upon demolition of structures/access.

3.2 Curtins Letter Report for Back of Ancoats, Plot C (2021)

3.2.1 Scope of Works

Ground investigation works were undertaken between 18th January 2021 and 5th February 2021.

The investigation was undertaken following the E3P 2019 Ground Investigation (Section 3.0) to assess and improve the knowledge of the area with respect to the ground conditions, and to aid contamination risk assessment and foundation design.

Specific investigation of the historic canal channel that cuts through the centre of Plot C was also undertaken, with access agreed through the western side of the site.

The site works comprised two rotary cored GeoboreS boreholes (R-C1 and R-C1A) up to 30m bgl, six window sample boreholes (WS-C1 to WS-C4, WS-C4A and WS-C4B) and four trial pits (TP-C1, TP-C2, TP-C4 and TP-C5). TP-C5 was undertaken to investigate whether or not a retaining structure exists adjacent to the old canal bridge. No structure was encountered.

3.2.2 Ground Conditions

A summary of the ground conditions encountered during the site investigation works is presented in Table 3.2.2 below, with detailed information presented in the exploratory hole logs included at the end of the Curtins (2021) report. A summary of each strata is presented below.

***Table 3.2.2** – Summary of Encountered Ground Conditions*

Stratum		Depth to Top of Strata m bgl	Thickness (m)		Description
			Min	Max	
MADE GROUND		0.00	>0.45	2.50	Concrete / Concrete and brick layer / Tarmacadam surface covering underlain by interbedded: MADE GROUND: Dark brown very sandy angular to subangular fine to coarse gravel of ash, brick, clinker, glass and concrete with low cobble content and low boulder content. Cobbles are angular of brick and scrap metal. Boulders are angular to subangular of brick and scrap metal. MADE GROUND: Blue-black sandy gravelly clay. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick, ash, concrete, porcelain, terracotta, clinker and glass
GLACIAL TILL	CLAY	1.40 – 3.00	8.40	8.90	Soft to firm, becoming stiff, brownish grey slightly sandy slightly gravelly CLAY.
	SAND	10.40 – 10.50	>2.10	3.50	Dense to very dense brown fine to coarse SAND.
	CLAY	14.00	-	4.50	Firm greyish brown slightly sandy gravelly CLAY to 17.0m bgl underlain by very stiff brown sandy CLAY.
MANCHESTER MARLS	MUDSTONE	18.50	-	7.38	Highly weathered extremely weak to weak brown thinly laminated MUDSTONE. Appears highly weathered in the upper strata (recovered as stiff brown slightly sandy clay).
	SANDSTONE	25.88	-	>4.12	Medium strong to strong reddish brown and grey medium to coarse grained SANDSTONE to 29.60m bgl. Extremely weak reddish brown medium grained SANDSTONE from 29.60m bgl.

3.2.3 Groundwater

Groundwater was encountered in WS-C1 to WS-C3 and TP-C1 to TP-C3 at elevations of between 47.42m to 46.96m AOD.

3.2.4 Obstructions

Obstructions were encountered in window sample boreholes WS-C4, WS-C4A and WS-C4B at 0.45m – 0.70m bgl noted to be brick foundations.

3.2.5 Observed Potential Contamination

An iridescent sheen was observed in water within R-C1A, with a slight hydrocarbon odour observed in Made Ground at 1.50m – 2.10m bgl.

TP-C2 and TP-C4 also recorded iridescent sheens on the groundwater encountered at 1.40m and 2.10m bgl respectively. Strong hydrocarbon odours were observed at the base of the cohesive Made Ground soils in these trial pits.

3.2.6 Ground Contamination

3 No. soil samples from Made Ground were obtained in total and were environmentally chemically analysed according to testing Suite A outlined in *Table 4.1*. Considering the sites proposed ned-use as apartments, the results were compared against adopted 'Residential Without Home Grown Produce' Generic Assessment Criteria (GACs) for an SOM of 6.0%.

Several exceedances were noted within recovered Made Ground samples, as detailed in *Table 4.6* below.

***Table 3.2.6** – Chemical Testing Result Exceedances*

Determinant	Exploratory Hole ID	Depth (m bgl)	Stratum	Concentration (mg/kg)	GAC (/ng/kg)
Cyanide	TP-C4	1.30	Made Ground	1320	34
Arsenic	WS-C4B	0.60	Made Ground	42	40
	TP-C4	0.30		120	
Lead	WS-C4B	0.60	Made Ground	2010	310
	TP-C4	1.30		1110	
Dibenzo(ah)anthracene	WS-C4B	0.60	Made Ground	0.34	0.32
	TP-C4	1.30			

Loose insulation and loose fibres of Chrysotile and Amosite asbestos were positively identified in the Made Ground sample from WS-C4B at 0.60m bgl, recording 0.508% by weight. No asbestos containing materials (AMCs) were visually identified in the exploratory holes on site.

3.2.7 Recommendations

Based on the environmental conditions encountered during the E3P and Curtins ground investigations, it is recommended that the previous measures identified by E3P for a clean cover system would be suitable to break the source-pathway-receptor link to the contaminants identified within **Table 3.2.6**.

Based on the ground and groundwater conditions encountered during the E3P and Curtins ground investigations, it is considered that shallow foundations will not be possible to support the proposed development. Foundations would need to be taken down below any Made Ground and low strength superficial

soils and be placed in the firm to very stiff cohesive Glacial Till deposits encountered, at depths of at least 3.00m bgl below existing ground level.

Considering the above, and subject to confirmation of building loads, piled foundations may be considered the best option to take the load of the structure to suitable bearing soils at depth. In these ground conditions, it is considered that some form of bored and in-situ cast concrete piled foundation with reinforced concrete ground beam should prove satisfactory.

It is considered likely that the driven/Continuous Flight Auger (CFA) piles would be the most suitable piling technique for the site. This suggestion does not however preclude the consideration of the other pile types being used. Should driven piles be proposed then consideration will need to be made for the existing obstructions encountered on site and the proximity of the canal.

4.0 Curtins Ground Investigation (2023)

External ground investigation works were undertaken by Curtins on the 15th February 2023.

The investigation was undertaken following the E3P (2019) Ground Investigation (Section 3.1) and the Curtins (2021) Ground Investigation (Section 3.2) to further assess and improve the knowledge of the ground conditions pertaining to the development site, which has previously been inaccessible, with respect to the ground conditions, and to aid contamination risk assessment and foundation design.

The scope of the ground investigation was designed in general accordance with current UK guidance including:

- Land Contamination Risk Management (Ref. 3);
- British Standard (BS) 10175:2011 + A2:2017 Investigation of Potentially Contaminated Sites (Ref. 4);
- BS5930:2015 + A1:2020 Code of Practice for Ground Investigations (Ref. 5); and,
- BS EN1997: Part 2:2007 Eurocode 7 (Ref. 6).

4.1 Scope of Works

The site works consisted of five window sample boreholes (WS-C6, WS-C7, WS-C8, WS-C9 and WS-C10) advanced to a maximum depth of 5.45m bgl or refusal. In-situ testing, including Standard Penetration Tests (SPTs) were undertaken at, generally, 1.00m intervals within the superficial soils.

An exploratory hole plan is included at the end of this report in Appendix A1, Ref. 077879-CUR-00-XX-DR-GE-80002-P01.

8 No. of soil samples, taken from the Made Ground, were taken and underwent environmental chemical testing, for Curtins Soil Suite A. Analysis was undertaken to assess the contamination risk presented to site end users and construction works in this area of the site. Copies of the environmental chemistry testing certificates are presented in Appendix A3.

2 No. groundwater samples were taken from the monitoring wells, and underwent environmental groundwater chemical testing, for Curtins Groundwater Suite A. Analysis was undertaken to assess the contamination risk presented to controlled waters. Copies of the environmental chemistry testing certificates are presented in Appendix A3.

5.0 Ground Conditions

A summary of the ground conditions encountered during the site investigation works is presented in *Table 5.0*, with detailed information presented in the exploratory hole logs included at the end of this report. A summary of each strata is presented below. Exploratory hole logs are provided in Appendix A2.

Table 5.0 - *Summary of Encountered Ground Conditions*

Stratum	Depth to Top of Strata m bgl	Thickness (m)		Description
		Min	Max	
TOPSOIL	0.00	-	0.20	Grass over brown slightly clayey fine to medium sand with frequent rootlets.
MADE GROUND	0.00 – 0.20	1.05	1.60	Hard standing comprising tarmac or concrete **Overlying** MADE GROUND: Dark brown gravelly sand with frequent cobbles; or, Light grey gravel (beneath concrete). **Overlying** MADE GROUND: Reddish brown gravel with abundant cobbles; or, Light brown firm slightly gravelly clay; or, Dark grey sandy clay; or, Very dark brown and blueish brown slightly clayey gravelly sand.
GLACIAL TILL	1.30	3.95	4.25[1]	Firm light brown mottled light grey silty clay.

1 – Base of strata not encountered.

5.1 Groundwater

Water strikes were recorded within two exploratory boreholes during the ground investigation works, 1.50m bgl within WS-C8 and at 2.00m bgl within WS-C9.

Ground gas and groundwater monitoring wells (50 mm diameter) were installed in 3 No. window sample boreholes. Groundwater, likely representing shallow groundwater bodies within the natural clay deposits were recorded during gas monitoring visits. The borehole response zones, and recorded water levels are detailed within *Table 5.1*.

Table 5.1 – *Monitoring Well Response Zones*

Borehole Ref.	Installation Strata	Response Zone m bgl	Depth to water level m bgl (m AOD)					
			27/02/23	03/03/23	09/03/23	16/03/23	22/03/23	27/03/23
WS-C6	Glacial Till	2.00 – 3.50	1.01	1.10	1.23	1.22	0.93	0.98
WS-C7	Made Ground	0.50 – 1.00	DRY	DRY	DRY	DRY	DRY	DRY
WS-C9	Glacial Till	3.00 – 5.00	2.05	2.05	2.48	2.46	2.54	2.45

5.2 Obstructions

Obstructions were noted during this site investigation:

- WS-C7 terminated at 1.60m bgl due to an obstruction,
- WS-C10 terminated at 0.80m due to an obstruction noted as a layer of organised bricks.

5.3 Observed Potential Contamination

Hydrocarbon odour and visual contamination were noted during the site investigation:

- WS-C6 (0.80m and 1.30m bgl) – hydrocarbon odour and visual contamination
- WS-C8 (1.00m and 1.50m bgl) – hydrocarbon odour and visual contamination

6.0 Ground Contamination Assessment

Samples were taken from the Made Ground and were analysed according to the testing Curtins Suite A. The laboratory chosen by Curtins to undertake the analysis was Envirolab, a UKAS and MCERTS accredited laboratory.

Soil samples were obtained to provide adequate and representative coverage for the proposed end use, accounting for the site's history.

Considering the sites proposed end-use for residential high-rise buildings with some bedrooms and commercial use on the ground floor as well as a communal garden, the laboratory results were compared against adopted '*Residential Without Plant Uptake*' end use Generic Assessment Criteria (GACs).

Soil Organic Matter (SOM) content has an influence on the volatilisation of organic contaminants (i.e., the higher the SOM, the lower the volatilisation rate and therefore inhalation exposure risk). Soil Organic Matter (SOM) value for the soils was 9.00% $^{w}/_{w}$ to 27.1% $^{w}/_{w}$. With consideration for a calculated geometric average, soil features determine an SOM of 15.94% $^{w}/_{w}$. As such, a comparison against Tier 1 Thresholds for SOM 6% $^{w}/_{w}$ for a '*Residential Without Plant Uptake*' end use has been adopted. The adopted GAC's are listed in Appendix A4.

Several exceedances were noted within recovered Made Ground samples, as detailed in *Table 6.0* below.

***Table 6.0** – Chemical Testing Result Exceedances*

Determinant	Exploratory Hole ID	Depth (m bgl)	Stratum	Concentration (mg/kg)	GAC (/ng/kg)
Arsenic	WS-C6	0.50	Made Ground	52	35
		0.90	Made Ground	83	
	WS-C7	0.30	Made Ground	66	
		1.10	Made Ground	53	
	WS-C8	0.40	Made Ground	37	
Lead	WS-C6	0.50	Made Ground	6710	310
		0.90	Made Ground	2280	
	WS-C7	0.30	Made Ground	316	
		1.10	Made Ground	363	
	WS-C8	0.40	Made Ground	2210	
	WS-C9	0.20	Made Ground	433	
Mercury	WS-C6	0.50	Made Ground	1.73	1
	WS-C7	0.30	Made Ground	2.08	
		1.10	Made Ground	1.04	
	WS-C8	0.40	Made Ground	1.14	
	WS-C10	0.30	Made Ground	1.37	
Benzo(a)anthracene	WS-C6	0.90	Made Ground	135	15
Benzo(a)pyrene	WS-C6	0.50	Made Ground	7.41	3.2
		0.90	Made Ground	78.3	
Benzo(b)fluoranthene	WS-C6	0.50	Made Ground	8.66	4

Determinant	Exploratory Hole ID	Depth (m bgl)	Stratum	Concentration (mg/kg)	GAC (/ng/kg)
		0.90	Made Ground	83.5	
Chrysene	WS-C6	0.90	Made Ground	190	32
Dibenzo(ah)anthracene	WS-C6	0.50	Made Ground	0.81	0.32
		0.90	Made Ground	10.8	
	WS-C9	0.34	Made Ground	0.34	
Naphthalene	WS-C6	0.90	Made Ground	1470	13
Aro >C10-C12	WS-C6	0.90	Made Ground	3320	1200
Aro >C12-C16	WS-C6	0.90	Made Ground	5770	2500
Aro >C16-C21	WS-C6	0.90	Made Ground	9040	1900
Aro >C21-C35	WS-C6	0.90	Made Ground	10100	1900
TPH (Ali & Aro)	WS-C6	0.90	Made Ground	29100	1900

The full chemical test results and adopted GAC's are listed in Appendix A3 and Appendix A4 respectively.

With respect to the proposed 'Residential Without Plant Uptake' end use, soil chemical analysis results recorded several exceedances when compared against GAC screening thresholds.

Concentrations of SVOC's and VOC's tested were recorded below laboratory limits of detection, with the exception of Dibenzofuran, Carbazole, 4-Nitrophenol, 2-Methylnaphthalene, Perylene, Benzene, Toluene, Ethylbenzene, m & p Xylene, o-Xylene, 1,3,5-Trimethylbenzene, and n-Butylbenzene. No GAC thresholds are available for these determinants, with the exception of 1,2,4-Trimethylbenzene, which was recorded below the relevant GAC threshold.

No suspected asbestos containing materials (ACMs) were identified in the exploratory hole logs. However, asbestos fibres were positively identified during laboratory screening in two samples taken at 0.30m and 1.10m bgl from WS-C7. These were identified as Chrysotile Board, 0.836% at 0.30m bgl and 0.074% at 1.10m bgl.

6.1 WAC Testing

Testing was undertaken on five samples, one from each exploratory hole location, for WAC testing. The full chemical test results are listed in Appendix A3.

7.0 Groundwater Contamination Assessment

Groundwater samples were taken from the monitoring wells and were analysed according to the testing Curtins Groundwater Suite A. The laboratory chosen by Curtins to undertake the analysis was Envirolab, a UKAS and MCERTS accredited laboratory.

In relation to the standards for controlled waters, there are currently no generic groundwater standards or surface water standards that are necessarily applicable to all sites.

However, dependant on the receptor identified as being at risk, the UK Drinking Water Standards (UK DWS) (Ref. 7), and/or Water Framework Directive Environmental Quality Standards (WFD EQS) (Ref. 8) can be utilised as primary screening values in a Level 1 assessment. These can also be supplemented by World Health Organisation (WHO) guidelines (Ref. 9), where WFD or DWS water quality standards (WQS) do not exist.

The full groundwater chemical test results and adopted GAC's are listed in Appendix A3 and Appendix A4 respectively.

With respect to the underlying Secondary B Aquifer within the Manchester Marl Formation, and a Principal Aquifer associated with the Collyhurst Sandstone Formation, some exceedances are noted within groundwater samples, as detailed in Table 7.0a.

Table 7.0a – *Exceedances Recorded against Drinking Water Standards (DWS)*

Determinant	DWS Threshold (µg/l)	Concentration (µg/l)	
		BH6	BH9
Benzo(a)pyrene	0.01	0.54	<0.01
Benzo(b)fluoranthene	0.1	0.54	<0.01
Benzo(ghi)perylene	0.1	0.22	<0.01
Benzo(k)fluoranthene	0.1	0.21	<0.01
Indeno(123-cd)pyrene	0.1	0.24	<0.01

Recovered groundwater samples show exceedances of UK Drinking Water Standards for five contaminants including Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, and Indeno(123-cd)pyrene.

Observations during sampling did not record olfactory or visual evidence of contamination in soils. Superficial soils are typically cohesive so are likely to limit downward migration of contamination.

With respect to surface water features some exceedances are noted within groundwater samples recovered on sample visit 1, as detailed in Table 7.0b.

Table 7.0b – *Exceedances Recorded against Environmental Quality Standards (EQS)*

Determinant	EQS Threshold (µg/l)	Concentration (µg/l)	
		BH6	BH9
Copper	1	50	<4
Zinc	10.9	14	5
Anthracene	0.1	2.36	<0.01
Benzo(a)pyrene	0.00017	0.54	<0.01
Aromatic >C8-C10	20	50	<5

Recovered groundwater samples show exceedances of UK Environmental Quality Standards for five contaminants including Copper, Zinc, Anthracene, Benzo(a)pyrene, and Aromatic >C8-C10. Superficial soils are typically cohesive so are likely to limit downward and horizontal migration of contamination. No free phase contamination was identified as part of the ground investigation works.

8.0 Gas Risk Assessment

Due to the sites history, along with the quantities of Made Ground encountered by E3P in 2019, and Curtins in both 2021 and 2023, it can be concluded that there was a Moderate risk from ground gas. There was potential

for Made Ground, containing organic/putrescible content as a potential source of ground gas generation. Noxious and asphyxiate gases were attributed to include, but not limited to, carbon dioxide, carbon monoxide, methane and hydrogen sulphide.

Three boreholes were installed with monitoring wells (WS-C6, WS-C7 and WS-C9). Six rounds of gas monitoring have been undertaken. The results log sheets are contained within Appendix A5 and summarised in *Table 8.0*.

Barometric pressures ranging between 987 and 1024mb were recorded during the monitoring period.

Table 8.0 – *Summary of Ground Gas Monitoring Results*

Exploratory Hole ID	Maximum Methane Concentration (%)	Maximum Carbon Dioxide Concentration (%)	Minimum Steady Oxygen Concentration (%)	Maximum Peak Gas Flow (l/hr)	Steady State Gas Flow (l/hr)
WS-C6	<0.1	5.3	15.2	0	0
WS-C7	<0.1	5.6	13.9	0	0
WS-C9	<0.1	1.8	18.9	56.6	0

Methane (CH_4) was recorded below the instrument's detection limit within all the monitoring wells.

Carbon Dioxide (CO2) recorded a maximum concentration of 5.6% $^{v}/_{v}$ within WS-C7 during the second visit.

Hydrogen Sulphide (H_2S) was not recorded in any boreholes.

Carbon Monoxide (CO) was recorded in only the first monitoring visit at all three monitoring locations, between 10ppm (WS-C6 and WS-C7) and 14 ppm (WS-C9).

The maximum peak air flow rate was recorded in WS-C9, at 56.6 on the third visit, reducing to a steady state air flow rate of 0.0 l/hr.

The assessment has been undertaken in accordance with guidance within BS8485:2019 (Ref. 10), to determine the risk to site end users and construction and maintenance workers from ground gas migration build up and inhalation.

From a review of groundwater level monitoring and the response zones of the monitoring wells (Table 3.2) it can be seen that the response zone within WS-C6 and WS-C9 were flooded during the monitoring visits. It is considered that the peak air flow rates in these flooded boreholes is likely to be linked to rising shallow groundwater in the solid section of the well installation causing an increase or decrease in internal pressure within the pipework, which is released, and subsequently equalised, when the valve tap is opened. This is detailed within BS8485:2015 (Ref. 10) and CL:AIRE Research Bulletin RB 17 (Ref. 11).

Considering the above, and using professional judgement, the elevated peak flow readings from the affected boreholes have been omitted from the calculations used in assessment of gas risk on site. Using this peak, instantaneous and misrepresentative flow value is likely to result in unnecessarily conservative protection measures. On this basis, the steady state air flow rates and maximum gas concentrations will be used to derive the gas screening value for the site.

In accordance with BS8485:2015 (Ref. 10) consideration of the recorded soil gas flow rates, presented below, enables hazardous gas flow rates (Qhg) to be evaluated. Qhg can be derived for both 'representative' and 'worst case' scenarios and a comparison made in support of an appropriate assessment of ground gas risk. For a 'representative' scenario (highest hazardous gas flow rate that is realistically possible, i.e. in a single

borehole) steady state flow rates and maximum gas concentrations are adopted, whilst for a 'worst case' scenario (highest Qhg across the entire dataset irrespective of location and discrete monitoring events) peak flows and gas concentrations are adopted

Evaluation of the 'representative' scenario (highest hazardous gas flow rate that is realistically possible, i.e. in a single borehole) records a maximum carbon dioxide Qhg of 0.006 l/hr (5.6%v/v CO2 and 0.1 l/hr in WS-C7).

Evaluation of the 'worst case' scenario (highest Qhg across the entire dataset irrespective of location and discrete monitoring events) records a maximum carbon dioxide Qhg of 0.006 l/hr (5.6%v/v CO2 in WS-C7) for maximum peak flow readings (<0.1l/hr) were used.

In accordance with BS8485:2015, the 'representative' GSV indicates a Characteristic Situation 1 (CS1) gas regime. However, Carbon Dioxide values were recorded greater than 5%v/v on multiple occasions within WS-C6 and WS-C7, therefore a Characteristic Situation 2 (CS2) gas regime, for which gas protection measures are required.

9.0 Closure

It can be concluded that there is a **Moderate** risk to site end-users from soil and dust inhalation, direct contact, and ingestion of shallow site soils beneath the site at this stage, due to the many exceedances identified within the Made Ground soil samples detailed in Table 6.0.

It can be concluded that there is a **Low** risk rating is identified to controlled waters (Groundwater and Surface Waters), considering the predominance of cohesive superficial soils beneath made ground on site acting to limit migration of contamination.

The risk posed to site end-users in terms of ground generating gases arising from organic / putrescible soils near the site surface is considered to be **Moderate/Low** due to the lack of noxious gases identified within the gas monitoring programme undertaken as part of this ground investigation.

Construction workers should be provided with appropriate personal protective equipment (PPE) with consideration of the environmental testing results presented.

It is considered that quantities of Made Ground will need to be removed from site to facilitate the clean cover requirements of soft landscaping and the surface to break the source-pathway-receptor linkage.

If you have any queries with regard to this letter report, please do not hesitate to contact us.

Yours sincerely,

LWoods

L Woods
Graduate Geo-Environmental Engineer
For and on behalf of
Curtins Consulting Ltd

Author	Reviewed	Authorised
L Woods BSc (Hons) MSc Graduate Geo-Environmental Engineer	**J Lord** BSc (Hons) MSc Senior Geo-Environmental Engineer	**R Allen** BSc (Hons) MSc FGS MCIWEM C.WEM CEng Associate

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Appendices

Appendix A1 – Drawings

Appendix A2 – Exploratory Hole Logs

Appendix A3 – Chemical Laboratory Testing Results

Appendix A4 – GAC Screening Thresholds

Appendix A5 – Ground Gas Monitoring Results

EXISTING BOREHOLES

- EXISTING CURTINS BOREHOLES
- EXISTING CURTINS TRIAL HOLES
- EXISTING E3P BOREHOLES
- EXISTING E3P TRIAL HOLES

CURTINS 2023 BOREHOLES

- CURTINS WINDOWLESS SAMPLE BOREHOLES

Rev:	Description:	Date:	By:	Chkd:

Curtins Consulting Ltd,
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
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Structures - Civils - Environmental - Infrastructure - Transport Planning - Sustainability - Expert Advisory Services
Birmingham - Bristol - Cardiff - Douglas - Edinburgh - Kendal - Leeds - Liverpool - London - Manchester - Nottingham

Status:

INFORMATION

Project:

JERSEY WHARF, PLOT C, MANCHESTER

Drg Title:

EXPLORATORY HOLE LOCATION PLAN

Scale:	Size:	First Issue:	Drawn:	Checked:
NTS	A3	14/03/2022	JL	RA

Drg No:	Rev:
077879-CUR-00-XX-DR-GE-80002	P01

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Borehole Log

Borehole No.
WS-C6
Sheet 1 of 1

Project Name:	Manlife BOA plot C - Jersey Wharf	Project No. 077879	Co-ords: -	Hole Type WS
Location:	Jersey Wharf, Ancoats		Level:	Scale 1:30
Client:	Mace		Dates: 15/02/2023 - 15/02/2023	Logged By JP

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.20			TOPSOIL: Grass cover over brown sligtly clayey sand with frequent rootlets. Sand is fine to medium.
		0.50 - 0.60	ES					MADE GROUND: Dark brown gravelly sand with frequent cobbles. Sand is fine to coarse. Gravel is subangular fine to coarse of brick, glass, ceramic, slate, concrete and sandstone. Cobbles are subangular of brick and concrete.
		0.90 - 1.00	ES		0.80			MADE GROUND: Very dark brown and blueish brown slightly clayey gravelly sand. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick, sandstone and coal.
		1.20		N=6 (1,0/1,1,2,2)				*Hydrocarbon odor and visual contamination*
					1.30			Firm light brown mottles light grey silty CLAY.
		2.00		N=4 (0,0/0,1,1,2)				
		3.00		N=25 (3,4/5,6,7,7)				
		4.00		N=32 (4,5/6,8,9,9)				
					5.45			End of borehole at 5.45 m

Remarks
Borehole cleared of buried services with CAT+Genny. Service clearance pit completed to 1.20mbgl. No groundwater encountered.

AGS

Borehole Log

Borehole No.
WS-C7
Sheet 1 of 1

Project Name: Manlife BOA plot C - Jersey Wharf	Project No. 077879	Co-ords: -	Hole Type WS
Location: Jersey Wharf, Ancoats		Level:	Scale 1:30
Client: Mace		Dates: 15/02/2023 - 15/02/2023	Logged By JP

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.15			TARMACADAM
		0.30 - 0.40	ES					MADE GROUND: Dark brown gravelly sand with frequent cobbles. Sand is fine to coarse. Gravel is subangular fine to coarse of brick, glass, ceramic, slate, concrete and sandstone. Cobbles are subangular of brick.
		1.00		N=49 (12,12/11,13,12,13)				
		1.10 - 1.20	ES					
		1.55		50 (11,12/50 for 155mm)	1.60			End of borehole at 1.60 m

Remarks
Borehole cleared of buried services with CAT+Genny. Service clearance pit completed to 1.20mbgl. No groundwater encountered. Borehole terminated at 1.60m bgl on obstruction.

Borehole Log

Borehole No.
WS-C8
Sheet 1 of 1

Project Name:	Manlife BOA plot C - Jersey Wharf	Project No. 077879	Co-ords: -	Hole Type WS
Location:	Jersey Wharf, Ancoats		Level:	Scale 1:30
Client:	Mace		Dates: 15/02/2023 - 15/02/2023	Logged By JP

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.20			CONCRETE
		0.40 - 0.50	ES		0.35			MADE GROUND: Light grey gravel. Gravel is subangualr, medium of limestone. (Imported gravel sub-base)
								MADE GROUND: Dark brown gravelly sand with frequent cobbles. Gravel is suabgnualr fine to coarse of brick, glass, ceramic, slate and concrete. Cobbles are subangular of brick.
		1.10 - 1.20	ES		1.00			MADE GROUND: Dark grey sandy clay. *Hydrocarbon odor and visual contamination*
		1.20		N=1 (0,0/0,0,0,1)				
	▼				1.50			Light brown mottled grey silty CLAY
		2.00		N=0 (1,0/0,0,0,0)				
		3.00		N=9 (1,2/1,2,3,3)				
		4.00		N=10 (2,2/2,2,3,3)				*No recovery due to water*
		5.00		N=13 (2,2/2,3,4,4)				
					5.45			End of borehole at 5.45 m

Remarks
Borehole cleared of buried services with CAT+Genny. Service clearance pit completed to 1.20mbgl. Groundwater encountered at 1.50m bgl

Borehole Log

Borehole No.
WS-C9
Sheet 1 of 1

Project Name:	Manlife BOA plot C - Jersey Wharf	Project No. 077879	Co-ords: -	Hole Type WS
Location:	Jersey Wharf, Ancoats		Level:	Scale 1:30
Client:	Mace		Dates: 16/02/2023 - 16/02/2023	Logged By JP

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.15			CONCRETE
		0.30 - 0.40	ES					MADE GROUND: Dark brown gravelly sand with occational cobbles. Gravel is suabgnualr fine to coarse of brick, glass, ceramic, limestone, slate and concrete. Cobbles are subangular of brick.
					0.80			MADE GROUND: Light brown firm slightly gravelly clay. Gravel is subangular fine to coarse of brick.
		1.20		N=7 (1,1/1,2,2,2)	1.20			Firm light brown mottled grey silty CLAY.
	▼	2.00		N=18 (2,3/4,4,5,5)				
		3.00		N=17 (1,2/3,4,5,5)				
		4.00		N=9 (1,1/2,2,2,3)				
		5.00		N=5 (0,0/0,1,2,2)				
					5.45			End of borehole at 5.45 m

Remarks
Borehole cleared of buried services with CAT+Genny. Service clearance pit completed to 1.20mbgl. Groundwater encountered at 2.00m bgl

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Borehole Log

Borehole No.
WS-C10
Sheet 1 of 1

Project Name:	Manlife BOA plot C - Jersey Wharf	Project No. 077879	Co-ords: -	Hole Type WS
Location:	Jersey Wharf, Ancoats		Level:	Scale 1:30
Client:	Mace		Dates: 16/02/2023 - 16/02/2023	Logged By JP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.30	ES					CONCRETE
					0.25			MADE GROUND: Dark brown gravelly sand with occational cobbles. Gravel is suabgnualr fine to coarse of brick, glass, ceramic, limestone, slate and concrete. Cobbles are subangular of brick.
					0.55			MADE GROUND: Reddish brown gravel with abundant cobbles. Gravel is subangular coarse of brick. Cobbles are subangular of brick. (Layer of organised bricks)
					0.80			End of borehole at 0.80 m

1
2
3
4
5
6

Remarks
Borehole cleared of buried services with CAT+Genny. Service clearance pit completed to 1.20mbgl. No groundwater encountered. Borehole terminated due to obstruction.

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 23/01438
Issue Number: 1 **Date:** 01 March, 2023

Client: Curtins Consulting (Manchester)
Merchant Exchange
17-19 Whitworth Street
Manchester
UK
M1 5WG

Project Manager: EBMA/Jonathan Lord
Project Name: Jersey Wharf
Project Ref: 077879
Order No: 4023
Date Samples Received: 17/02/23
Date Instructions Received: 20/02/23
Date Analysis Completed: 01/03/23

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

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Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/1	23/01438/2	23/01438/3	23/01438/4	23/01438/5	23/01438/6	23/01438/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	2	1	2	1			
Client Sample ID	WS-C6	WS-C6	WS-C7	WS-C7	WS-C8	WS-C8	WS-C9			
Depth to Top	0.5	0.9	0.3	1.1	0.4	1.1	0.2			
Depth To Bottom	0.6	1.0	0.4	1.2	0.5	1.2	0.3			
Date Sampled	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	16-Feb-23			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AB	4ABE	4A	6AE	4AB			
% Stones >10mm$_{A}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH$_{D}^{M\#}$	6.88	7.32	8.01	9.89	8.72	7.53	11.07	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_{D}^{M\#}$	0.17	0.02	0.11	0.03	0.14	0.23	0.22	g/l	0.01	A-T-026s
Cyanide (total)$_{A}^{M\#}$	<1	<1	24	1	<1	<1	<1	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_{A}$	<0.2	3.4	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	0.2	A-T-050s
Organic Matter$_{D}^{M\#}$	15.7	27.1	11.5	9.0	15.0	16.3	17.0	% w/w	0.1	A-T-032s
Arsenic$_{D}^{M\#}$	52	83	66	53	37	11	26	mg/kg	1	A-T-024s
Boron (water soluble)$_{D}^{M\#}$	<1.0	<1.0	<1.0	<1.0	1.3	3.8	1.3	mg/kg	1	A-T-027s
Cadmium$_{D}^{M\#}$	4.0	3.0	3.4	2.1	1.2	0.7	1.4	mg/kg	0.5	A-T-024s
Copper$_{D}^{M\#}$	650	336	198	156	119	39	148	mg/kg	1	A-T-024s
Chromium$_{D}^{M\#}$	25	20	98	79	16	49	26	mg/kg	1	A-T-024s
Chromium (hexavalent)$_{D}$	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-040s
Lead$_{D}^{M\#}$	6710	2280	316	363	2210	103	433	mg/kg	1	A-T-024s
Mercury$_{D}$	1.73	0.71	2.08	1.04	1.14	0.24	0.54	mg/kg	0.17	A-T-024s
Nickel$_{D}^{M\#}$	42	32	50	45	34	36	41	mg/kg	1	A-T-024s
Selenium$_{D}^{M\#}$	<1	1	2	<1	3	<1	1	mg/kg	1	A-T-024s
Zinc$_{D}^{M\#}$	1870	1380	425	310	138	78	195	mg/kg	5	A-T-024s

Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/1	23/01438/2	23/01438/3	23/01438/4	23/01438/5	23/01438/6	23/01438/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	2	1	2	1			
Client Sample ID	WS-C6	WS-C6	WS-C7	WS-C7	WS-C8	WS-C8	WS-C9			
Depth to Top	0.5	0.9	0.3	1.1	0.4	1.1	0.2			
Depth To Bottom	0.6	1.0	0.4	1.2	0.5	1.2	0.3			
Date Sampled	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	16-Feb-23			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AB	4ABE	4A	6AE	4AB			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	NAD	Chrysotile	Chrysotile	NAD	NAD	NAD			A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	Board	-	-	-	-			A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	Board	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	N/A	No	No	N/A	N/A	N/A			A-T-045
Asbestos in Soil Quantification % (Hand Picking & Weighing)										
Asbestos in soil % composition (hand picking and weighing)$_{D}$	-	-	0.836	0.074	-	-	-	% w/w	0.001	A-T-054

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Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/1	23/01438/2	23/01438/3	23/01438/4	23/01438/5	23/01438/6	23/01438/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	2	1	2	1			
Client Sample ID	WS-C6	WS-C6	WS-C7	WS-C7	WS-C8	WS-C8	WS-C9			
Depth to Top	0.5	0.9	0.3	1.1	0.4	1.1	0.2			
Depth To Bottom	0.6	1.0	0.4	1.2	0.5	1.2	0.3			
Date Sampled	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	16-Feb-23			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AB	4ABE	4A	6AE	4AB			
PAH-16MS										
Acenaphthene$_{A}^{M\#}$	0.52	69	0.35	0.22	0.04	<0.01	0.17	mg/kg	0.01	A-T-019s
Acenaphthylene$_{A}^{M\#}$	0.34	238	0.17	0.03	0.01	0.04	0.06	mg/kg	0.01	A-T-019s
Anthracene$_{A}^{M\#}$	2.26	208	1.25	0.38	0.13	0.10	0.52	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_{A}^{M\#}$	9.36	135	3.65	1.27	0.55	0.06	2.24	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_{A}^{M\#}$	7.41	78.3	2.58	1.17	0.58	<0.04	2.67	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_{A}^{M\#}$	8.66	83.5	2.67	1.53	0.71	<0.05	3.08	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_{A}^{M\#}$	2.88	33.2	1.13	0.67	0.38	<0.05	1.99	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_{A}^{M\#}$	3.24	43.4	0.87	0.57	0.24	<0.07	1.14	mg/kg	0.07	A-T-019s
Chrysene$_{A}^{M\#}$	8.92	190	3.56	1.26	0.56	<0.06	2.32	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_{A}^{M\#}$	0.81	10.8	0.29	0.14	0.07	<0.04	0.34	mg/kg	0.04	A-T-019s
Fluoranthene$_{A}^{M\#}$	15.3	598	5.63	2.51	0.87	0.18	4.02	mg/kg	0.08	A-T-019s
Fluorene$_{A}^{M\#}$	0.43	362	0.46	0.14	0.04	0.07	0.14	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_{A}^{M\#}$	2.98	42.1	1.07	0.65	0.34	<0.03	1.76	mg/kg	0.03	A-T-019s
Naphthalene $_{A}^{M\#}$	0.35	1470	0.30	0.08	<0.03	0.18	0.34	mg/kg	0.03	A-T-019s
Phenanthrene$_{A}^{M\#}$	6.87	838	6.22	1.83	0.62	0.32	2.34	mg/kg	0.03	A-T-019s
Pyrene$_{A}^{M\#}$	19	557	7.88	2.48	0.95	0.18	4.26	mg/kg	0.07	A-T-019s
Total PAH-16MS$_{A}^{M\#}$	89.3	4960	38.1	14.9	6.09	1.13	27.4	mg/kg	0.01	A-T-019s

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Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/1	23/01438/2	23/01438/3	23/01438/4	23/01438/5	23/01438/6	23/01438/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	2	1	2	1			
Client Sample ID	WS-C6	WS-C6	WS-C7	WS-C7	WS-C8	WS-C8	WS-C9			
Depth to Top	0.5	0.9	0.3	1.1	0.4	1.1	0.2			
Depth To Bottom	0.6	1.0	0.4	1.2	0.5	1.2	0.3			
Date Sampled	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	16-Feb-23			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AB	4ABE	4A	6AE	4AB			
SVOC excluding PAH-16										
4-Bromophenyl phenyl ether$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Hexachlorobenzene$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Diethyl phthalate$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Dibenzofuran$_A$	-	124000	537	-	-	<100	118	µg/kg	100	A-T-052s
Carbazole$_A$	-	46900	305	-	-	<100	213	µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	-	<25000	<500	-	-	<500	<500	µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
4-Nitrophenol$_A$	-	24100	201	-	-	<100	<100	µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
2-Nitrophenol$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
2-Methylphenol$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
1,2,4-Trichlorobenzene$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
2-Chlorophenol$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
1,4-Dichlorobenzene$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
1,3-Dichlorobenzene$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
1,2-Dichlorobenzene$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	-	202000	501	-	-	<100	175	µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Phenol$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Pentachlorophenol$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s

Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/1	23/01438/2	23/01438/3	23/01438/4	23/01438/5	23/01438/6	23/01438/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	2	1	2	1			
Client Sample ID	WS-C6	WS-C6	WS-C7	WS-C7	WS-C8	WS-C8	WS-C9			
Depth to Top	0.5	0.9	0.3	1.1	0.4	1.1	0.2			
Depth To Bottom	0.6	1.0	0.4	1.2	0.5	1.2	0.3			
Date Sampled	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	16-Feb-23			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AB	4ABE	4A	6AE	4AB			
n-Dioctylphthalate$_A$	-	<25000	<500	-	-	<500	<500	µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	-	<5000	<600	-	-	<600	<600	µg/kg	100	A-T-052s
Nitrobenzene$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Isophorone$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Hexachloroethane$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Hexachlorobutadiene$_A$	-	<5000	<100	-	-	<100	<100	µg/kg	100	A-T-052s
Perylene$_A$	-	48600	887	-	-	<100	749	µg/kg	100	A-T-052s

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Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/1	23/01438/2	23/01438/3	23/01438/4	23/01438/5	23/01438/6	23/01438/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	2	1	2	1			
Client Sample ID	WS-C6	WS-C6	WS-C7	WS-C7	WS-C8	WS-C8	WS-C9			
Depth to Top	0.5	0.9	0.3	1.1	0.4	1.1	0.2			
Depth To Bottom	0.6	1.0	0.4	1.2	0.5	1.2	0.3			
Date Sampled	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	16-Feb-23			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AB	4ABE	4A	6AE	4AB			
VOC										
Dichlorodifluoromethane$_{A}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Chloromethane$_{A}$	-	<50	<10	-	-	<10	<10	µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Dichloromethane$_{A}$	-	<25	<5	-	-	<5	<5	µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	-	<25	<5	-	-	<5	<5	µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	-	<10	<2	-	-	<2	<2	µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	-	121	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	-	<50	<10	-	-	<10	<10	µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	-	193	<1	-	-	<1	<1	µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	-	<15	<3	-	-	<3	<3	µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s

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Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/1	23/01438/2	23/01438/3	23/01438/4	23/01438/5	23/01438/6	23/01438/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	2	1	2	1			
Client Sample ID	WS-C6	WS-C6	WS-C7	WS-C7	WS-C8	WS-C8	WS-C9			
Depth to Top	0.5	0.9	0.3	1.1	0.4	1.1	0.2			
Depth To Bottom	0.6	1.0	0.4	1.2	0.5	1.2	0.3			
Date Sampled	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	16-Feb-23			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AB	4ABE	4A	6AE	4AB			
Chlorobenzene$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Ethylbenzene$_{A}$#	-	37	<1	-	-	<1	<1	µg/kg	1	A-T-006s
m & p Xylene$_{A}$#	-	430	<1	-	-	<1	<1	µg/kg	1	A-T-006s
o-Xylene$_{A}$#	-	337	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Styrene$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Bromoform$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Isopropylbenzene$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
Bromobenzene$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
n-Propylbenzene$_{A}$#	-	6	<1	-	-	<1	<1	µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}$#	-	242	<1	-	-	<1	<1	µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}$#	-	<10	<2	-	-	<2	<2	µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}$#	-	551	<1	-	-	<1	<1	µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
n-Butylbenzene$_{A}$#	-	16	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	-	<10	<2	-	-	<2	<2	µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	-	<15	<3	-	-	<3	<3	µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}$#	-	<5	<1	-	-	<1	<1	µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	-	<15	<3	-	-	<3	<3	µg/kg	3	A-T-006s

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Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/1	23/01438/2	23/01438/3	23/01438/4	23/01438/5	23/01438/6	23/01438/7	Units	Limit of Detection	Method ref
Client Sample No	1	2	1	2	1	2	1			
Client Sample ID	WS-C6	WS-C6	WS-C7	WS-C7	WS-C8	WS-C8	WS-C9			
Depth to Top	0.5	0.9	0.3	1.1	0.4	1.1	0.2			
Depth To Bottom	0.6	1.0	0.4	1.2	0.5	1.2	0.3			
Date Sampled	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	15-Feb-23	16-Feb-23			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AB	4ABE	4A	6AE	4AB			
TPH CWG with Clean Up										
Ali >C5-C6$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_{A}^{\#}$	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_{A}$	3	<100	1	1	<1	<1	2	mg/kg	1	A-T-055s
Ali >C10-C12$_{A}^{M\#}$	3	<100	1	1	<1	<1	2	mg/kg	1	A-T-055s
Ali >C12-C16$_{A}^{M\#}$	6	138	2	3	1	<1	3	mg/kg	1	A-T-055s
Ali >C16-C21$_{A}^{M\#}$	8	<100	9	5	2	4	9	mg/kg	1	A-T-055s
Ali >C21-C35$_{A}^{M\#}$	15	498	319	32	6	31	182	mg/kg	1	A-T-055s
Total Aliphatics$_{A}$	34	636	333	42	10	35	199	mg/kg	1	Calc-As Recd
Aro >C5-C7$_{A}^{\#}$	<0.01	0.27	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_{A}^{\#}$	<0.01	0.49	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_{A}$	3	244	2	2	2	1	6	mg/kg	1	A-T-055s
Aro >C10-C12$_{A}$	6	3320	2	2	<1	<1	3	mg/kg	1	A-T-055s
Aro >C12-C16$_{A}$	37	5770	10	31	4	6	10	mg/kg	1	A-T-055s
Aro >C16-C21$_{A}^{M\#}$	163	9040	43	117	8	10	32	mg/kg	1	A-T-055s
Aro >C21-C35$_{A}^{M\#}$	435	10100	147	166	21	67	109	mg/kg	1	A-T-055s
Total Aromatics$_{A}$	643	28400	204	318	36	84	160	mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_{A}$	677	29100	537	360	45	119	359	mg/kg	1	Calc-As Recd
BTEX - Benzene$_{A}^{\#}$	<0.01	0.27	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_{A}^{\#}$	<0.01	0.49	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_{A}^{\#}$	<0.01	0.10	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_{A}^{\#}$	<0.01	1.11	0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_{A}^{\#}$	<0.01	0.90	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE$_{A}^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s

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Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/8							Units	Limit of Detection	Method ref
Client Sample No	1									
Client Sample ID	WS-C10									
Depth to Top	0.3									
Depth To Bottom	0.4									
Date Sampled	16-Feb-23									
Sample Type	Soil - ES									
Sample Matrix Code	4AB									
% Stones >10mm$_{A}$	<0.1							% w/w	0.1	A-T-044
pH$_{D}^{M\#}$	11.12							pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_{D}^{M\#}$	0.17							g/l	0.01	A-T-026s
Cyanide (total)$_{A}^{M\#}$	<1							mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_{A}$	<0.2							mg/kg	0.2	A-T-050s
Organic Matter$_{D}^{M\#}$	4.9							% w/w	0.1	A-T-032s
Arsenic$_{D}^{M\#}$	18							mg/kg	1	A-T-024s
Boron (water soluble)$_{D}^{M\#}$	1.0							mg/kg	1	A-T-027s
Cadmium$_{D}^{M\#}$	1.0							mg/kg	0.5	A-T-024s
Copper$_{D}^{M\#}$	58							mg/kg	1	A-T-024s
Chromium$_{D}^{M\#}$	20							mg/kg	1	A-T-024s
Chromium (hexavalent)$_{D}$	<1							mg/kg	1	A-T-040s
Lead$_{D}^{M\#}$	1090							mg/kg	1	A-T-024s
Mercury$_{D}$	1.37							mg/kg	0.17	A-T-024s
Nickel$_{D}^{M\#}$	23							mg/kg	1	A-T-024s
Selenium$_{D}^{M\#}$	<1							mg/kg	1	A-T-024s
Zinc$_{D}^{M\#}$	148							mg/kg	5	A-T-024s

Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/8							Units	Limit of Detection	Method ref
Client Sample No	1									
Client Sample ID	WS-C10									
Depth to Top	0.3									
Depth To Bottom	0.4									
Date Sampled	16-Feb-23									
Sample Type	Soil - ES									
Sample Matrix Code	4AB									
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD									A-T-045
Asbestos Matrix (visual)$_{D}$	-									A-T-045
Asbestos Matrix (microscope)$_{D}$	-									A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A									A-T-045

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Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/8							Units	Limit of Detection	Method ref
Client Sample No	1									
Client Sample ID	WS-C10									
Depth to Top	0.3									
Depth To Bottom	0.4									
Date Sampled	16-Feb-23									
Sample Type	Soil - ES									
Sample Matrix Code	4AB									
PAH-16MS										
Acenaphthene$_{A}^{M\#}$	0.94							mg/kg	0.01	A-T-019s
Acenaphthylene$_{A}^{M\#}$	0.03							mg/kg	0.01	A-T-019s
Anthracene$_{A}^{M\#}$	1.43							mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_{A}^{M\#}$	2.36							mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_{A}^{M\#}$	2.02							mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_{A}^{M\#}$	2.41							mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_{A}^{M\#}$	0.88							mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_{A}^{M\#}$	0.76							mg/kg	0.07	A-T-019s
Chrysene$_{A}^{M\#}$	2.44							mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_{A}^{M\#}$	0.19							mg/kg	0.04	A-T-019s
Fluoranthene$_{A}^{M\#}$	5.54							mg/kg	0.08	A-T-019s
Fluorene$_{A}^{M\#}$	0.71							mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_{A}^{M\#}$	0.85							mg/kg	0.03	A-T-019s
Naphthalene $_{A}^{M\#}$	1.70							mg/kg	0.03	A-T-019s
Phenanthrene$_{A}^{M\#}$	6.86							mg/kg	0.03	A-T-019s
Pyrene$_{A}^{M\#}$	5.65							mg/kg	0.07	A-T-019s
Total PAH-16MS$_{A}^{M\#}$	34.8							mg/kg	0.01	A-T-019s

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Envirolab Job Number: 23/01438

Client Project Name: Jersey Wharf

Client Project Ref: 077879

Lab Sample ID	23/01438/8							Units	Limit of Detection	Method ref
Client Sample No	1									
Client Sample ID	WS-C10									
Depth to Top	0.3									
Depth To Bottom	0.4									
Date Sampled	16-Feb-23									
Sample Type	Soil - ES									
Sample Matrix Code	4AB									
TPH CWG with Clean Up										
Ali >C5-C6$_{A}^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C6-C8$_{A}^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C8-C10$_{A}$	<1							mg/kg	1	A-T-055s
Ali >C10-C12$_{A}^{M\#}$	2							mg/kg	1	A-T-055s
Ali >C12-C16$_{A}^{M\#}$	5							mg/kg	1	A-T-055s
Ali >C16-C21$_{A}^{M\#}$	5							mg/kg	1	A-T-055s
Ali >C21-C35$_{A}^{M\#}$	9							mg/kg	1	A-T-055s
Total Aliphatics$_{A}$	21							mg/kg	1	Calc-As Recd
Aro >C5-C7$_{A}^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C7-C8$_{A}^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C8-C10$_{A}$	5							mg/kg	1	A-T-055s
Aro >C10-C12$_{A}$	60							mg/kg	1	A-T-055s
Aro >C12-C16$_{A}$	102							mg/kg	1	A-T-055s
Aro >C16-C21$_{A}^{M\#}$	224							mg/kg	1	A-T-055s
Aro >C21-C35$_{A}^{M\#}$	349							mg/kg	1	A-T-055s
Total Aromatics$_{A}$	739							mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35)$_{A}$	759							mg/kg	1	Calc-As Recd
BTEX - Benzene$_{A}^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Toluene$_{A}^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_{A}^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_{A}^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - o Xylene$_{A}^{\#}$	<0.01							mg/kg	0.01	A-T-022s
MTBE$_{A}^{\#}$	<0.01							mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Curtins Consulting (Manchester), Merchant Exchange, 17-19 Whitworth Street , Manchester, UK, M1 5WG

Project: Jersey Wharf

Clients Project No: 077879

Project No: 23/01438

Date Received: 20/02/2023 (am)

Cool Box Temperatures (°C): 14.6, 14.7

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	23/01438/1	23/01438/2	23/01438/3	23/01438/4	23/01438/5	23/01438/6	23/01438/7	23/01438/8
Client Sample No	1	2	1	2	1	2	1	1
Client Sample ID/Depth	WS-C6 0.5-0.6m	WS-C6 0.9-1.0m	WS-C7 0.3-0.4m	WS-C7 1.1-1.2m	WS-C8 0.4-0.5m	WS-C8 1.1-1.2m	WS-C9 0.2-0.3m	WS-C10 0.3-0.4m
Date Sampled	15/02/23	15/02/23	15/02/23	15/02/23	15/02/23	15/02/23	16/02/23	16/02/23
A-T-004s	24/02/2023			24/02/2023		24/02/2023	24/02/2023	24/02/2023
A-T-006s		24/02/2023	28/02/2023			24/02/2023	24/02/2023	
A-T-007s	23/02/2023			23/02/2023		23/02/2023	23/02/2023	23/02/2023
A-T-019s	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023
A-T-022s	23/02/2023	23/02/2023	23/02/2023	23/02/2023	23/02/2023	23/02/2023	23/02/2023	23/02/2023
A-T-024s	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023
A-T-025w	24/02/2023			24/02/2023		24/02/2023	24/02/2023	24/02/2023
A-T-026s	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023
A-T-026w	24/02/2023			24/02/2023		24/02/2023	24/02/2023	24/02/2023
A-T-027s	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023
A-T-030s	24/02/2023			21/02/2023		24/02/2023	24/02/2023	24/02/2023
A-T-031s	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023
A-T-031w	24/02/2023			24/02/2023		24/02/2023	24/02/2023	24/02/2023
A-T-032s	27/02/2023	27/02/2023	24/02/2023	24/02/2023	27/02/2023	27/02/2023	27/02/2023	27/02/2023
A-T-032w	24/02/2023			24/02/2023		24/02/2023	24/02/2023	24/02/2023
A-T-037w	24/02/2023			24/02/2023		24/02/2023	24/02/2023	24/02/2023
A-T-040s	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023	24/02/2023
A-T-042sTCN	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
A-T-044	23/02/2023	23/02/2023	23/02/2023	23/02/2023	23/02/2023	23/02/2023	23/02/2023	23/02/2023
A-T-045	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
A-T-050s	23/02/2023	23/02/2023	24/02/2023	23/02/2023	23/02/2023	23/02/2023	23/02/2023	23/02/2023
A-T-050w	24/02/2023			24/02/2023		24/02/2023	24/02/2023	24/02/2023
A-T-052s		01/03/2023	24/02/2023			24/02/2023	24/02/2023	
A-T-054			23/02/2023	23/02/2023				
A-T-055s	27/02/2023	27/02/2023	27/02/2023	27/02/2023	27/02/2023	27/02/2023	27/02/2023	27/02/2023
A-T-ANCs	28/02/2023			27/02/2023		27/02/2023	27/02/2023	27/02/2023
Calc-As Recd	27/02/2023	27/02/2023	27/02/2023	27/02/2023	27/02/2023	27/02/2023	27/02/2023	27/02/2023
Calc-no stones	24/02/2023			24/02/2023		24/02/2023	24/02/2023	24/02/2023
Probe (w)	24/02/2023			24/02/2023		24/02/2023	24/02/2023	24/02/2023

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8, Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

Final Test Report

Envirolab Job Number:	23/01438		
Issue Number:	1	Date:	1-Mar-23
Client:	Curtins Consulting (Manchester) Merchant Exchange 17-19 Whitworth Street Manchester UK M1 5WG		
Project Manager:	EBMA/Jonathan Lord		
Project Name:	Jersey Wharf		
Project Ref:	77879		
Order No:	4023		
Date Samples Received:	17-Feb-23		
Date Instructions Received:	20-Feb-23		
Date Analysis Completed:	1-Mar-23		

Notes - Soil analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

This report shall not be reproduced, except in full, without written approval from Envirolab.

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts

For complex, multi-compound analysis, quality control results do not always fall within chart limits for every compound and we have criteria for reporting in these situations.

If results are in italic font they are associated with such quality control failures and may be unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid

Predominant Matrix Codes: 1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample

Secondary Matrix Codes: A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis, NDP indicates No Determination Possible and NAD indicates No Asbestos Detected.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

HWOL TPH Code: EH_CU_1D_AL: Extractable hydrocarbons - i.e. everything extracted by the solvent(s), Clean-up - e.g. by florisil, silica gel, GC - Single coil gas chromatography, Aliphatics only

Approved by:

Richard Wong
Client Manager

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	23/01438/1				
Client Sample Number				1		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				WS-C6				
Depth to Top				0.5				
Depth to Bottom				0.60				
Date Sampled				15/02/2023				
Sample Type				Soil - ES				
Sample Matrix Code				4AB				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	N	N	**6.88**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.22**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.06**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**13.9**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**9.09**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**90.2**		100	-	-
Mineral Oil (mg/kg)$_{A\ EH_CU_1D_AL}$	A-T-007	N	N	**83**		500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using**		
				mg/l	**mg/kg**	**BS EN 12457-2 at L/S 10 l/kg (mg/kg)**		
Arsenic	A-T-025	N	N	0.002	**0.020**	0.5	2	25
Barium	A-T-025	N	N	0.056	**0.560**	20	100	300
Cadmium	A-T-025	N	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	<0.001	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	0.032	**0.320**	2	50	100
Mercury	A-T-025	N	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.009	**0.090**	0.5	10	30
Nickel	A-T-025	N	N	<0.002	**<0.02**	0.4	10	40
Lead	A-T-025	N	N	0.213	**2.130**	0.5	10	50
Antimony	A-T-025	N	N	0.001	**0.010**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.103	**1.030**	4	50	200
Chloride	A-T-026	N	N	2	**21**	800	15000	25000
Fluoride	A-T-026	N	N	0.8	**8.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	7	**68**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	56	**560**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<2.0	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	7.9				
Conductivity (µS/cm)	A-T-037	N	N	112				
Mass Sample (kg)				0.203				
Dry Matter (%)	A-T-044	N	N	86.3				

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	23/01438/4				
Client Sample Number				2		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				WS-C7				
Depth to Top				1.1				
Depth to Bottom				1.20				
Date Sampled				15/02/2023				
Sample Type				Soil - ES				
Sample Matrix Code				4ABE				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	N	N	**9.89**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.18**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.05**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**ndp**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**5.24**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**15.2**		100	-	-
Mineral Oil (mg/kg)$_{A\ EH_CU_1D_AL}$	A-T-007	N	N	**27**		500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)**		
				mg/l	**mg/kg**			
Arsenic	A-T-025	N	N	0.009	**0.090**	0.5	2	25
Barium	A-T-025	N	N	0.039	**0.390**	20	100	300
Cadmium	A-T-025	N	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	0.002	**0.020**	0.5	10	70
Copper	A-T-025	N	N	0.005	**0.050**	2	50	100
Mercury	A-T-025	N	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.004	**0.040**	0.5	10	30
Nickel	A-T-025	N	N	<0.002	**<0.02**	0.4	10	40
Lead	A-T-025	N	N	0.025	**0.250**	0.5	10	50
Antimony	A-T-025	N	N	0.002	**0.020**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.009	**0.090**	4	50	200
Chloride	A-T-026	N	N	1	**11**	800	15000	25000
Fluoride	A-T-026	N	N	0.7	**7.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	7	**66**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	66	**660**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<2.0	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	8.0				
Conductivity (µS/cm)	A-T-037	N	N	132				
Mass Sample (kg)				0.197				
Dry Matter (%)	A-T-044	N	N	88.7				

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	23/01438/6				
Client Sample Number				2		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				WS-C8				
Depth to Top				1.1				
Depth to Bottom				1.20				
Date Sampled				15/02/2023				
Sample Type				Soil - ES				
Sample Matrix Code				6AE				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	N	N	**7.53**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.7**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.08**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**27.2**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**9.48**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**1.12**		100	-	-
Mineral Oil (mg/kg)$_{A\ EH_CU_1D_AL}$	A-T-007	N	N	**42**		500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)**		
				mg/l	**mg/kg**			
Arsenic	A-T-025	N	N	0.007	**0.070**	0.5	2	25
Barium	A-T-025	N	N	0.043	**0.430**	20	100	300
Cadmium	A-T-025	N	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	<0.001	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	<0.004	**<0.04**	2	50	100
Mercury	A-T-025	N	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.018	**0.180**	0.5	10	30
Nickel	A-T-025	N	N	0.002	**0.020**	0.4	10	40
Lead	A-T-025	N	N	0.003	**0.030**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.097	**0.970**	4	50	200
Chloride	A-T-026	N	N	7	**73**	800	15000	25000
Fluoride	A-T-026	N	N	0.5	**5.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	6	**62**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	115	**1150**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	35.50	**355**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	7.9				
Conductivity (µS/cm)	A-T-037	N	N	229				
Mass Sample (kg)				0.681				
Dry Matter (%)	A-T-044	N	N	25.7				

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	23/01438/7				
Client Sample Number				1		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				WS-C9				
Depth to Top				0.2				
Depth to Bottom				0.30				
Date Sampled				16/02/2023				
Sample Type				Soil - ES				
Sample Matrix Code				4AB				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	N	N	**11.07**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.17**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.03**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**12.2**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**9.86**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**28.1**		100	-	-
Mineral Oil (mg/kg)$_{A\ EH_CU_1D_AL}$	A-T-007	N	N	**51**		500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)**		
				mg/l	**mg/kg**			
Arsenic	A-T-025	N	N	<0.001	**<0.01**	0.5	2	25
Barium	A-T-025	N	N	0.109	**1.090**	20	100	300
Cadmium	A-T-025	N	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	0.004	**0.040**	0.5	10	70
Copper	A-T-025	N	N	0.013	**0.130**	2	50	100
Mercury	A-T-025	N	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.009	**0.090**	0.5	10	30
Nickel	A-T-025	N	N	<0.002	**<0.02**	0.4	10	40
Lead	A-T-025	N	N	0.001	**0.010**	0.5	10	50
Antimony	A-T-025	N	N	0.001	**0.010**	0.06	0.7	5
Selenium	A-T-025	N	N	0.002	**0.020**	0.1	0.5	7
Zinc	A-T-025	N	N	<0.002	**<0.02**	4	50	200
Chloride	A-T-026	N	N	4	**40**	800	15000	25000
Fluoride	A-T-026	N	N	0.4	**4.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	19	**193**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	638	**6380**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<2.0	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	11.8				
Conductivity (µS/cm)	A-T-037	N	N	1276				
Mass Sample (kg)				0.21				
Dry Matter (%)	A-T-044	N	N	83.3				

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	23/01438/8				
Client Sample Number				1		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				WS-C10				
Depth to Top				0.3				
Depth to Bottom				0.40				
Date Sampled				16/02/2023				
Sample Type				Soil - ES				
Sample Matrix Code				4AB				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	N	N	**11.12**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.83**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.28**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**4.6**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**2.84**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**35.1**		100	-	-
Mineral Oil (mg/kg)$_{A\ EH_CU_1D_AL}$	A-T-007	N	N	**21**		500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)**		
				mg/l	**mg/kg**			
Arsenic	A-T-025	N	N	0.004	**0.040**	0.5	2	25
Barium	A-T-025	N	N	0.040	**0.400**	20	100	300
Cadmium	A-T-025	N	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	0.010	**0.100**	0.5	10	70
Copper	A-T-025	N	N	<0.004	**<0.04**	2	50	100
Mercury	A-T-025	N	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.005	**0.050**	0.5	10	30
Nickel	A-T-025	N	N	<0.002	**<0.02**	0.4	10	40
Lead	A-T-025	N	N	0.002	**0.020**	0.5	10	50
Antimony	A-T-025	N	N	0.003	**0.030**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	<0.002	**<0.02**	4	50	200
Chloride	A-T-026	N	N	2	**22**	800	15000	25000
Fluoride	A-T-026	N	N	0.6	**6.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	19	**188**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	167	**1670**	4000	60000	100000
Phenol Index	A-T-050	N	N	0.07	**0.70**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<2.0	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	11.0				
Conductivity (µS/cm)	A-T-037	N	N	334				
Mass Sample (kg)				0.2				
Dry Matter (%)	A-T-044	N	N	87.5				

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 23/02996
Issue Number: 1 **Date:** 11 April, 2023

Client: Curtins Consulting (Manchester)
Merchant Exchange
17-19 Whitworth Street
Manchester
UK
M1 5WG

Project Manager: Jonathan Lord/Jonathan Provis
Project Name: Jersey Wharf
Project Ref: 77879
Order No: 5078
Date Samples Received: 28/03/23
Date Instructions Received: 29/03/23
Date Analysis Completed: 11/04/23

Approved by:

Richard Wong
Client Manager

UKAS TESTING
1247

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Envirolab Job Number: 23/02996

Client Project Name: Jersey Wharf

Client Project Ref: 77879

Lab Sample ID	23/02996/1	23/02996/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH6	BH9								
Depth to Top	0.98	2.45								
Depth To Bottom	3.71	4.93								
Date Sampled	27-Mar-23	27-Mar-23								
Sample Type	Water - GW	Water - GW								
Sample Matrix Code	N/A	N/A								
pH (w)$_{A}$#	7.60	7.84						pH	0.01	A-T-031w
Hardness Total$_{A}$#	388	674						mg/l Ca CO3	2	A-T-049w
Sulphate (w)$_{A}$#	54	204						mg/l	1	A-T-026w
Cyanide (total) (w)$_{A}$#	<0.005	<0.005						mg/l	0.005	A-T-042wTCN
Phenols - Total by HPLC (w)$_{A}$	<0.01	<0.01						mg/l	0.01	A-T-050w
Sulphide (w)$_{A}$	<0.1	<0.1						mg/l	0.1	A-T-043-w
DOC - Dissolved Organic Carbon (w)$_{A}$#	7.9	<2.0						mg/l	2	A-T-032w
Arsenic (dissolved)$_{A}$#	1	<1						µg/l	1	A-T-025w
Boron (dissolved)$_{A}$#	99	124						µg/l	10	A-T-025w
Cadmium (dissolved)$_{A}$#	<0.2	<0.2						µg/l	0.2	A-T-025w
Calcium (dissolved)$_{A}$#	129	87						mg/l	1	A-T-049w
Copper (dissolved)$_{A}$	50	<4						µg/l	4	A-T-025w
Chromium (dissolved)$_{A}$#	<1	<1						µg/l	1	A-T-025w
Lead (dissolved)$_{A}$#	<1	<1						µg/l	1	A-T-025w
Mercury (dissolved)$_{A}$#	<0.1	<0.1						µg/l	0.1	A-T-025w
Nickel (dissolved)$_{A}$#	<2	4						µg/l	2	A-T-025w
Selenium (dissolved)$_{A}$#	3	<1						µg/l	1	A-T-025w
Zinc (dissolved)$_{A}$#	14	5						µg/l	2	A-T-025w

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Envirolab Job Number: 23/02996

Client Project Name: Jersey Wharf

Client Project Ref: 77879

Lab Sample ID	23/02996/1	23/02996/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH6	BH9								
Depth to Top	0.98	2.45								
Depth To Bottom	3.71	4.93								
Date Sampled	27-Mar-23	27-Mar-23								
Sample Type	Water - GW	Water - GW								
Sample Matrix Code	N/A	N/A								
PAH 16MS (w)										
Acenaphthene (w)$_A^{\#}$	5.56	0.02						µg/l	0.01	A-T-019w
Acenaphthylene (w)$_A^{\#}$	29.01	0.08						µg/l	0.01	A-T-019w
Anthracene (w)$_A^{\#}$	2.36	<0.01						µg/l	0.01	A-T-019w
Benzo(a)anthracene (w)$_A^{\#}$	0.75	<0.01						µg/l	0.01	A-T-019w
Benzo(a)pyrene (w)$_A^{\#}$	0.54	<0.01						µg/l	0.01	A-T-019w
Benzo(b)fluoranthene (w)$_A^{\#}$	0.54	<0.01						µg/l	0.01	A-T-019w
Benzo(ghi)perylene (w)$_A^{\#}$	0.22	<0.01						µg/l	0.01	A-T-019w
Benzo(k)fluoranthene (w)$_A^{\#}$	0.21	<0.01						µg/l	0.01	A-T-019w
Chrysene (w)$_A^{\#}$	0.76	<0.01						µg/l	0.01	A-T-019w
Dibenzo(ah)anthracene (w)$_A^{\#}$	0.06	<0.01						µg/l	0.01	A-T-019w
Fluoranthene (w)$_A^{\#}$	3.42	<0.01						µg/l	0.01	A-T-019w
Fluorene (w)$_A^{\#}$	12.87	0.03						µg/l	0.01	A-T-019w
Indeno(123-cd)pyrene (w)$_A^{\#}$	0.24	<0.01						µg/l	0.01	A-T-019w
Naphthalene (w)$_A^{\#}$	0.41	0.03						µg/l	0.01	A-T-019w
Phenanthrene (w)$_A^{\#}$	1.84	<0.01						µg/l	0.01	A-T-019w
Pyrene (w)$_A^{\#}$	3.13	<0.01						µg/l	0.01	A-T-019w
Total PAH 16MS (w)$_A^{\#}$	61.9	0.16						µg/l	0.01	A-T-019w

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Envirolab Job Number: 23/02996

Client Project Name: Jersey Wharf

Client Project Ref: 77879

Lab Sample ID	23/02996/1	23/02996/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH6	BH9								
Depth to Top	0.98	2.45								
Depth To Bottom	3.71	4.93								
Date Sampled	27-Mar-23	27-Mar-23								
Sample Type	Water - GW	Water - GW								
Sample Matrix Code	N/A	N/A								
SVOC (excluding PAH-16) (w)										
1,2,4-Trichlorobenzene$_A$	<1	<1						µg/l	1	A-T-052w
1,2-Dichlorobenzene$_A$	<1	<1						µg/l	1	A-T-052w
1,3-Dichlorobenzene$_A$	<1	<1						µg/l	1	A-T-052w
1,4-Dichlorobenzene$_A$	<1	<1						µg/l	1	A-T-052w
2,4,5-Trichlorophenol$_A$	<1	<1						µg/l	1	A-T-052w
2,4,6-Trichlorophenol$_A$	<1	<1						µg/l	1	A-T-052w
2,4-Dichlorophenol$_A$	<1	<1						µg/l	1	A-T-052w
2,4-Dimethylphenol$_A$	<1	<1						µg/l	1	A-T-052w
2,4-Dinitrotoluene$_A$	<1	<1						µg/l	1	A-T-052w
2,6-Dinitrotoluene$_A$	<1	<1						µg/l	1	A-T-052w
2-Chloronaphthalene$_A$	<1	<1						µg/l	1	A-T-052w
2-Chlorophenol$_A$	<1	<1						µg/l	1	A-T-052w
2-Methylnaphthalene$_A$	<1	<1						µg/l	1	A-T-052w
2-Methylphenol$_A$	<1	<1						µg/l	1	A-T-052w
2-Nitrophenol$_A$	<1	<1						µg/l	1	A-T-052w
4-Bromophenyl phenyl ether$_A$	<1	<1						µg/l	1	A-T-052w
4-Chloro-3-methylphenol$_A$	<1	<1						µg/l	1	A-T-052w
Bis(2-chloroisopropyl)ether$_A$	<1	<1						µg/l	1	A-T-052w
3+4-Methylphenol$_A$	<1	<1						µg/l	1	A-T-052w
4-Nitrophenol$_A$	<1	<1						µg/l	1	A-T-052w
Bis(2-chloroethyl)ether$_A$	<1	<1						µg/l	1	A-T-052w
Bis(2-chloroethoxy)methane$_A$	<1	<1						µg/l	1	A-T-052w
Bis(2-ethylhexyl)phthalate$_A$	<10	<10						µg/l	10	A-T-052w
Butylbenzyl phthalate$_A$	<1	<1						µg/l	1	A-T-052w
Carbazole$_A$	7	<1						µg/l	1	A-T-052w
Dibenzofuran$_A$	7	<1						µg/l	1	A-T-052w
n-Dibutylphthalate$_A$	<1	<1						µg/l	1	A-T-052w
n-Dioctylphthalate$_A$	<10	<10						µg/l	10	A-T-052w
n-Nitroso-n-dipropylamine$_A$	<1	<1						µg/l	1	A-T-052w
Diethyl phthalate$_A$	<1	<1						µg/l	1	A-T-052w
Dimethyl phthalate$_A$	<1	<1						µg/l	1	A-T-052w
Hexachlorobutadiene$_A$	<1	<1						µg/l	1	A-T-052w

Envirolab Job Number: 23/02996

Client Project Name: Jersey Wharf

Client Project Ref: 77879

Lab Sample ID	23/02996/1	23/02996/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH6	BH9								
Depth to Top	0.98	2.45								
Depth To Bottom	3.71	4.93								
Date Sampled	27-Mar-23	27-Mar-23								
Sample Type	Water - GW	Water - GW								
Sample Matrix Code	N/A	N/A								
Hexachlorobenzene SVOC$_A$	<1	<1						µg/l	1	A-T-052w
Pentachlorophenol SVOC$_A$	<1	<1						µg/l	1	A-T-052w
Phenol$_A$	<1	<1						µg/l	1	A-T-052w
Hexachloroethane$_A$	<1	<1						µg/l	1	A-T-052w
Nitrobenzene$_A$	<1	<1						µg/l	1	A-T-052w
Isophorone$_A$	<1	<1						µg/l	1	A-T-052w
Hexachlorocyclopentadiene$_A$	<1	<1						µg/l	1	A-T-052w
Perylene$_A$	<1	<1						µg/l	1	A-T-052w

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Envirolab Job Number: 23/02996

Client Project Name: Jersey Wharf

Client Project Ref: 77879

Lab Sample ID	23/02996/1	23/02996/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH6	BH9								
Depth to Top	0.98	2.45								
Depth To Bottom	3.71	4.93								
Date Sampled	27-Mar-23	27-Mar-23								
Sample Type	Water - GW	Water - GW								
Sample Matrix Code	N/A	N/A								
VOC (w)										
Dichlorodifluoromethane$_{A}$	<1	<1						µg/l	1	A-T-006w
Chloromethane$_{A}$	<10	<10						µg/l	10	A-T-006w
Vinyl Chloride$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Bromomethane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Chloroethane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Trichlorofluoromethane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Dichloromethane$_{A}$	<5	<5						µg/l	5	A-T-006w
Carbon Disulphide$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
1,1-Dichloroethene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
1,1-Dichloroethane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Bromochloromethane$_{A}^{\#}$	<5	<5						µg/l	5	A-T-006w
Chloroform$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
2,2-Dichloropropane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
1,2-Dichloroethane$_{A}^{\#}$	<2	<2						µg/l	2	A-T-006w
1,1,1-Trichloroethane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
1,1-Dichloropropene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Benzene$_{A}^{\#}$	1	<1						µg/l	1	A-T-006w
Carbon Tetrachloride$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Dibromomethane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
1,2-Dichloropropane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Bromodichloromethane$_{A}^{\#}$	<10	<10						µg/l	10	A-T-006w
Trichloroethene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
1,1,2-Trichloroethane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Toluene$_{A}^{\#}$	2	<1						µg/l	1	A-T-006w
1,3-Dichloropropane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Dibromochloromethane$_{A}^{\#}$	<3	<3						µg/l	3	A-T-006w
1,2-Dibromoethane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Tetrachloroethene$_{A}$	<1	<1						µg/l	1	A-T-006w

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Envirolab Job Number: 23/02996

Client Project Name: Jersey Wharf

Client Project Ref: 77879

Lab Sample ID	23/02996/1	23/02996/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH6	BH9								
Depth to Top	0.98	2.45								
Depth To Bottom	3.71	4.93								
Date Sampled	27-Mar-23	27-Mar-23								
Sample Type	Water - GW	Water - GW								
Sample Matrix Code	N/A	N/A								
1,1,1,2-Tetrachloroethane$_{A}$	<1	<1						µg/l	1	A-T-006w
Chlorobenzene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Ethylbenzene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
m & p Xylene$_{A}^{\#}$	2	<1						µg/l	1	A-T-006w
Bromoform$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Styrene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
1,1,2,2-Tetrachloroethane$_{A}$	<1	<1						µg/l	1	A-T-006w
o-Xylene$_{A}^{\#}$	2	<1						µg/l	1	A-T-006w
1,2,3-Trichloropropane$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Isopropylbenzene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
Bromobenzene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
2-Chlorotoluene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
n-propylbenzene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
4-Chlorotoluene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
1,2,4-Trimethylbenzene$_{A}^{\#}$	2	<1						µg/l	1	A-T-006w
4-Isopropyltoluene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
1,3,5-Trimethylbenzene$_{A}^{\#}$	2	<1						µg/l	1	A-T-006w
1,2-Dichlorobenzene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
1,4-Dichlorobenzene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
sec-Butylbenzene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
tert-Butylbenzene$_{A}^{\#}$	<2	<2						µg/l	2	A-T-006w
1,3-Dichlorobenzene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
n-butylbenzene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w
1,2-Dibromo-3-chloropropane$_{A}^{\#}$	<2	<2						µg/l	2	A-T-006w
1,2,4-Trichlorobenzene$_{A}^{\#}$	<3	<3						µg/l	3	A-T-006w
1,2,3-Trichlorobenzene$_{A}^{\#}$	<3	<3						µg/l	3	A-T-006w
Hexachlorobutadiene$_{A}^{\#}$	<1	<1						µg/l	1	A-T-006w

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Envirolab Job Number: 23/02996

Client Project Name: Jersey Wharf

Client Project Ref: 77879

Lab Sample ID	23/02996/1	23/02996/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH6	BH9								
Depth to Top	0.98	2.45								
Depth To Bottom	3.71	4.93								
Date Sampled	27-Mar-23	27-Mar-23								
Sample Type	Water - GW	Water - GW								
Sample Matrix Code	N/A	N/A								
TPH CWG (w) with Clean Up										
Ali >C5-C6 (w)$_A^{\#}$	<1	<1						µg/l	1	A-T-022w
Ali >C6-C8 (w)$_A^{\#}$	<1	<1						µg/l	1	A-T-022w
Ali >C8-C10 (w)$_A^{\#}$	<5	<5						µg/l	5	A-T-055w
Ali >C10-C12 (w)$_A^{\#}$	<5	<5						µg/l	5	A-T-055w
Ali >C12-C16 (w)$_A^{\#}$	<5	<5						µg/l	5	A-T-055w
Ali >C16-C21 (w)$_A^{\#}$	<5	<5						µg/l	5	A-T-055w
Ali >C21-C35 (w)$_A^{\#}$	12	<5						µg/l	5	A-T-055w
Total Aliphatics (w)$_A^{\#}$	12	<5						µg/l	5	Calc-As Recd
Aro >C5-C7 (w)$_A^{\#}$	<1	<1						µg/l	1	A-T-022w
Aro >C7-C8 (w)$_A^{\#}$	1	<1						µg/l	1	A-T-022w
Aro >C8-C10 (w)$_A$	50	<5						µg/l	5	A-T-055w
Aro >C10-C12 (w)$_A^{\#}$	115	<5						µg/l	5	A-T-055w
Aro >C12-C16 (w)$_A^{\#}$	457	<5						µg/l	5	A-T-055w
Aro >C16-C21 (w)$_A^{\#}$	72	6						µg/l	5	A-T-055w
Aro >C21-C35 (w)$_A$	<10	<10						µg/l	10	A-T-055w
Total Aromatics (w)$_A$	695	<10						µg/l	10	Calc-As Recd
TPH (Ali & Aro >C5-C35) (w)$_A$	707	<10						µg/l	10	Calc-As Recd
BTEX - Benzene (w)$_A^{\#}$	<1	<1						µg/l	1	A-T-022w
BTEX - Toluene (w)$_A^{\#}$	1	<1						µg/l	1	A-T-022w
BTEX - Ethyl Benzene (w)$_A^{\#}$	<1	<1						µg/l	1	A-T-022w
BTEX - m & p Xylene (w)$_A^{\#}$	2	<1						µg/l	1	A-T-022w
BTEX - o Xylene (w)$_A^{\#}$	2	<1						µg/l	1	A-T-022w
MTBE (w)$_A^{\#}$	<1	<1						µg/l	1	A-T-022w

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
Subscript "^" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Curtins Consulting (Manchester), Merchant Exchange, 17-19 Whitworth Street , Manchester, UK, M1 5WG

Project: Jersey Wharf

Clients Project No: 77879

Project No: 23/02996

Date Received: 29/03/2023 (am)

Cool Box Temperatures (°C): 7.0

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	23/02996/1	23/02996/2
Client Sample No		
Client Sample ID/Depth	BH6 0.98-3.71m	BH9 2.45-4.93m
Date Sampled	27/03/23	27/03/23
A-T-006w	04/04/2023	04/04/2023
A-T-019w	11/04/2023	11/04/2023
A-T-022w	03/04/2023	03/04/2023
A-T-025w	05/04/2023	05/04/2023
A-T-026w	03/04/2023	03/04/2023
A-T-031w	04/04/2023	04/04/2023
A-T-032w	04/04/2023	04/04/2023
A-T-042wTCN	31/03/2023	31/03/2023
A-T-043-w	31/03/2023	31/03/2023
A-T-049w	31/03/2023	31/03/2023
A-T-050w	03/04/2023	31/03/2023
A-T-052w	03/04/2023	03/04/2023
A-T-055w	03/04/2023	03/04/2023
Calc-As Recd	03/04/2023	03/04/2023

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

Adopted Soil Generic Assessment Criteria
Sandy loam with 6% SOM

Contaminants	Residential with home grown produce	Residential without home grown produce	Allotments	Commercial	Public open space near residential housing POS_{resi}	Public park POS_{park}
Metals						
Beryllium	*1.7*	*1.7*	*35*	*12*	*2.2*	*63*
Boron	*290*	*11,000*	*45*	*240,000*	*21,000*	*46,000*
Cadmium	**10**[13] 22	**85**[13] 150	**1.8** 3.9	**230** 410	*120* 220	*560* 880
Chromium III	*910*	*910*	*18,000*	*8,600*	*1,500*	*33,000*
Chromium VI	*6* 21	*6* 21	*1.8* 170	*33* 49	*7.7* 21	*220* 250
Lead	200	310	80	2,300	630	1,300
Mercury *(elemental)*	**1**	**1**	**26**	**26**	*16*	**26**[8] [*30*]
Mercury (inorganic)	**170**	**240**	**80**	**3600**	*120*	*240*
Nickel	*130*[10]	*180*[10]	*53*[11]	*980*[10]	*230*	*800*
Vanadium	*410*	*1200*	*91*	*9000*	*2000*	*5000*
Copper	*2400*	*7100*	*520*	*68000*	*12000*	*44000*
Zinc	*3700*	*40000*	*620*	*730000*	*81000*	*170000*
Semi-Metals and non-metals						
Arsenic	**32**[12] 37	**35**[12] 40	**43**[12] 49	**640**[12] 640	*79* 79	*170* 170
Antimony		***550***		***7500***	***1500***	***3300***
Selenium	**350**	**600**	**120**	**13000**	*1100*	*1800*
Inorganic chemicals						
Cyanide	34	34	34	34	34	34
Organic contaminants						
Aliphatic risk banded hydrocarbons - TPHCWG method						
$EC_{>5}$ - EC_6	*160*	*160*	*3900*	*12000*	*600000*	*180000*
$EC_{>6}$ - EC_8	*530*	*530*	*13000*	*40000*	*620000*	*320000*
$EC_{>8}$ - EC_{10}	*150*	*150*	*1700*	*11000*	*13000*	*21000*
EC_{10}-EC_{12}	*760*	*770*	*7300*	*47000*	*13000*	*24000*
EC_{12}-EC_{16}	*4300*	*4400*	*13000*	*90000*	*13000*	*26000*
$EC_{>16}$ - EC_{35}	*110000*	*110000*	*270000*	*1800000*	*250000*	*490000*
$EC_{>35}$ - EC_{44}	*110000*	*110000*	*270000*	*1800000*	*250000*	*490000*
Aromatic risk banded hydrocarbons - TPHCWG method						
$EC_{>5}$ - EC_7	*300*	*1400*	*57*	*86000*	*56000*	*92000*
$EC_{>7}$ - EC_8	*660*	*3900*	*120*	*180000*	*56000*	*100000*
$EC_{>8}$ - EC_{10}	*190*	*270*	*51*	*17000*	*5000*	*9300*
EC_{10} - EC_{12}	*380*	*1200*	*74*	*34000*	*5000*	*10000*
EC_{12} - EC_{16}	*660*	*2500*	*130*	*38000*	*5000*	*10000*
$EC_{>16}$ - EC_{21}	*930*	*1900*	*260*	*28000*	*3800*	*7800*
$EC_{>21}$ - EC_{35}	*1700*	*1900*	*1600*	*28000*	*3800*	*7900*
$EC_{>35}$ - EC_{44}	*1700*	*1900*	*1600*	*28000*	*3800*	*7900*
Aliph + Arom EC >44-70	*1900*	*1900*	*3000*	*28000*	3800	7900
Aromatic						
Benzene	**0.33** 0.87	**1.0** 3.3	**0.07** 0.18	**95** 98	*73* 140	*110* 230
Ethyl benzene	**350**	**840**	**90**	**2800**[8] [66000]	**2800**[8] [*25000*]	**2800**[8] [*27000*]
Toluene	**610**	**2700**	**120**	**4400**[8] [190000]	**4400**[8] [*56000*]	**4400**[8] [*100000*]
Xylene[9]	**230**	**290**	**160**	**2600**[8] [32000]	**2600**[8] [*43000*]	**2600**[8] [*31000*]
Phenol	**420**	**520**	**280**	**3200**[14] (38000)	**3200**[14] (*10000*)	**3200**[14] (*9300*)
Polycyclic Aromatic Hydrocarbons (PAH)						
Naphthalene	*13*	*13*	*24*	*1100*	*4900*	*3000*
Acenaphthylene	*920*	*6000*	*160*	*100000*	*15000*	*30000*
Acenaphthene	*1100*	*6000*	*200*	*100000*	*15000*	*30000*
Fluorene	*860*	*4500*	*160*	*71000*	*9900*	*20000*
Phenanthrene	*440*	*1500*	*90*	*23000*	*3100*	*6300*
Anthracene	*11000*	*37000*	*2200*	*540000*	*74000*	*150000*
Fluoranthene	*890*	*1600*	*290*	*23000*	*3100*	*6400*
Pyrene	*2000*	*3800*	*620*	*54000*	*7400*	*15000*
Benz(a)anthracene	*13*	*15*	*13*	*180*	*29*	*62*
Chrysene	*27*	*32*	*19*	*350*	*57*	*120*
Benzo(b)fluoranthene	*3.7*	*4.0*	*3.9*	*45*	*7.2*	*16.0*
Benzo(k)fluoranthene	*100*	*110*	*130*	*1200*	*190*	*440*
Benzo(a)pyrene	*3.0* 5.0	*3.2* 5.3	*3.5* 5.7	*36* 77	*5.7* 10	*13* 21
Indeno(123cd)pyrene	*41*	*46*	*39*	*510*	*82*	*180*
Dibenzo(ah)anthracene	*0.3*	*0.32*	*0.43*	*3.6*	*0.58*	*1.4*
Benzo(ghi)perylene	*350*	*360*	*640*	*4000*	*640*	*1600*
Chlorinated Aliphatic Hydrocarbons						
Vinyl chloride	*0.0014*	*0.0015*	*0.0018*	*0.12*	*3.5*	*5.4*
Trichloroethene (TCE)	*0.075*	*0.08*	*0.21*	*5.7*	*120*	*120*
1,1,1,2 Tetrachlorethane	*6.4*	*8.2*	*4.4*	*560*	*1400*	*2100*
Tetrachlorethene (PCE)	*0.90*	*0.92*	*3.6*	*95*	*1400*	*1500*
1,1,1 Trichlorethane	*39*	*40*	*240*	*3000*	*140000*	*100000*

Notes

1. All values above are in mg/kg
2. **Numbers in bold are SGVs or GAC that are derived based on SGV report input parameters**, *numbers in italics are S4ULs*, ***numbers in bold-italics are based on EIC/AGS/CL:AIRE numbers & input parameters*** and underlined numbers are C4SLs
3. Soil organic matter (SOM) is assumed to be 6% - DEFAULT VALUE
4. Soil type is assumed to be sandy loam - DEFAULT SOIL TYPE
5. For residential, the building type is conservatively assumed to be a small terrace house where the development includes bungalows change to more conservative bungalow setting in computer model
6. For commercial, the building type is conservatively assumed to be a pre 1970s office building, where the proposed development comprises houses, flat with living spaces changes setting in model accordingly
7. For classrooms consider increasing the dust loading fator in the 'Soil and Building Data' of the CLEA 1.04 model from 50 to 100µg m^{-3}
8. Based on vapour saturation limt as suggested by EA / [ ] model value
9. Lowest of o-, m- and p-xylene
10. Based on comparison of inhalation exposure with inhalation TDI
11. Based on comparison of oral, dermal, and inhalation exposure with the oral TDI
12. Based on a comparison of oral and dermal soil exposure with oral Index Dose only
13. Averaged over and based on lifetime exposure
14. Based on critical concentration for skin irritation in humans arising from contact with phenol in aqueous solution (number in brackets based on health effects following long term exposure for illustration)
15. NA: Not applicable

Adopted Soil Generic Assessment Criteria
Sandy loam with 2.5% SOM

Contaminants	Residential with home grown produce	Residential without home grown produce	Allotments	Commercial	Public open space near residential housing POS_{resi}	Public park POS_{park}
Metals						
Beryllium	*1.7*	*1.7*	*35*	*12*	*2.2*	*63*
Boron	*290*	*11,000*	*45*	*240,000*	*21,000*	*46,000*
Cadmium	**10**[13] 22	**85**[13] 150	**1.8** 3.9	**230** 410	*120* 220	*560* 880
Chromium III	*910*	*910*	*18,000*	*8,600*	*1,500*	*33,000*
Chromium VI	*6* 21	*6* 21	*1.8* 170	*33* 49	*7.7* 21	*220* 250
Lead	200	310	80	2,300	630	1,300
Mercury *(elemental)*	**1**	**1**	**26**	**26**	*16*	**26**[8] *[30]*
Mercury (inorganic)	**170**	**240**	**80**	**3600**	*120*	*240*
Nickel	*130*[10]	*180*[10]	*53*[11]	*980*[10]	*230*	*800*
Vanadium	*410*	*1200*	*91*	*9000*	*2000*	*5000*
Copper	*2400*	*7100*	*520*	*68000*	*12000*	*44000*
Zinc	*3700*	*40000*	*620*	*730000*	*81000*	*170000*
Semi-Metals and non-metals						
Arsenic	**32**[12] 37	**35**[12] 40	**43**[12] 49	**640**[12] 640	*79* 79	*170* 170
Antimony		***550***		***7500***	***1500***	***3300***
Selenium	**350**	**600**	**120**	**13000**	*1100*	*1800*
Inorganic chemicals						
Cyanide	34	34	34	34	34	34
Organic contaminants						
Aliphatic risk banded hydrocarbons - TPHCWG method						
$EC_{>5}$ - EC_6	*78*	*78*	*1700*	*5900*	*590000*	*130000*
$EC_{>6}$ - EC_8	*230*	*230*	*5600*	*17000*	*610000*	*220000*
$EC_{>8}$ - EC_{10}	*65*	*65*	*770*	*4800*	*13000*	*18000*
EC_{10}-EC_{12}	*330*	*330*	*4400*	*23000*	*13000*	*23000*
EC_{12}-EC_{16}	*2400*	*2400*	*13000*	*82000*	*13000*	*25000*
$EC_{>16}$ - EC_{35}	*92000*	*92000*	*270000*	*1700000*	*250000*	*480000*
$EC>_{35}$ - EC_{44}	*92000*	*92000*	*270000*	*1700000*	*250000*	*480000*
Aromatic risk banded hydrocarbons - TPHCWG method						
$EC>_5$ - EC_7	*140*	*690*	*27*	*46000*	*56000*	*84000*
$EC>_7$ - EC_8	*290*	*1800*	*51*	*110000*	*56000*	*95000*
$EC_{>8}$ - EC_{10}	*83*	*110*	*21*	*8100*	*5000*	*8500*
EC_{10} - EC_{12}	*180*	*590*	*31*	*28000*	*5000*	*9700*
EC_{12} - EC_{16}	*330*	*2300*	*57*	*37000*	*5100*	*10000*
$EC_{>16}$ - EC_{21}	*540*	*1900*	*110*	*28000*	*3800*	*7700*
$EC_{>21}$ - EC_{35}	*1500*	*1900*	*820*	*28000*	*3800*	*7800*
$EC>_{35}$ - EC_{44}	*1500*	*1900*	*820*	*28000*	*3800*	*7800*
Aliph + Arom EC >44-70	*1800*	*1900*	*2100*	*28000*	3800	7800
Aromatic						
Benzene	**0.16**	**0.49**	**0.035**	**50**	*72*	*100*
Ethyl benzene	**150**	**380**	**39**	**1200**[8] [35000]	**1200**[8] *[24000]*	**1200**[8] *[22000]*
Toluene	**270**	**1300**	**51**	**1900**[8] [110000]	**1900**[8] *[56000]*	**1900**[8] *[95000]*
Xylene[9]	**98**	**120**	**70**	**1200**[8] [14000]	**1200**[8] *[42000]*	**1200**[8] *[23000]*
Phenol	**290**	**420**	**140**	**1500**[14] (35000)	**1500**[14] *(10000)*	**1500**[14] *(8300)*
Polycyclic Aromatic Hydrocarbons (PAH)						
Naphthalene	*5.6*	*5.6*	*10*	*460*	*4900*	*1900*
Acenaphthylene	*420*	*4600*	*69*	*97000*	*15000*	*30000*
Acenaphthene	*510*	*4700*	*85*	*97000*	*15000*	*30000*
Fluorene	*400*	*3800*	*67*	*68000*	*9900*	*20000*
Phenanthrene	*220*	*1500*	*38*	*22000*	*3100*	*6200*
Anthracene	*5400*	*35000*	*950*	*540000*	*74000*	*150000*
Fluoranthene	*560*	*1600*	*130*	*23000*	*3100*	*6300*
Pyrene	*1200*	*3800*	*270*	*54000*	*7400*	*15000*
Benz(a)anthracene	*11*	*14*	*6.5*	*170*	*29*	*56*
Chrysene	*22*	*31*	*9.4*	*350*	*57*	*110*
Benzo(b)fluoranthene	*3.3*	*4.0*	*2.1*	*44*	*7.2*	*15*
Benzo(k)fluoranthene	*93*	*110*	*75*	*1200*	*190*	*410*
Benzo(a)pyrene	*2.7*	*3.2*	*2*	*35*	*5.7*	*12*
Indeno(123cd)pyrene	*36*	*46*	*21*	*510*	*82*	*170*
Dibenzo(ah)anthracene	*0.28*	*0.32*	*0.27*	*3.6*	*0.57*	*1.3*
Benzo(ghi)perylene	*340*	*360*	*470*	*4000*	*640*	*1500*
Chlorinated Aliphatic Hydrocarbons						
Vinyl chloride	*0.00087*	*0.001*	*0.001*	*0.077*	*3.5*	*5*
Trichloroethene (TCE)	*0.034*	*0.036*	*0.091*	*2.6*	*120*	*91*
1,1,1,2 Tetrachlorethane	*2.8*	*3.5*	*1.9*	*250*	*1400*	*1800*
Tetrachlorethene (PCE)	*0.39*	*0.4*	*1.5*	*42*	*1400*	*1100*
1,1,1 Trichlorethane	*18*	*18*	*110*	*1300*	*140000*	*76000*

Notes

1. All values above are in mg/kg
2. **Numbers in bold are SGVs or GAC that are derived based on SGV report input parameters**, *numbers in italics are S4ULs*, ***numbers in bold-italics are based on EIC/AGS/CL:AIRE numbers & input parameters*** and underlined numbers are C4SLs
3. Soil organic matter (SOM) is assumed to be 2.5% - DEFAULT VALUE
4. Soil type is assumed to be sandy loam - DEFAULT SOIL TYPE
5. For residential, the building type is conservatively assumed to be a small terrace house where the development includes bungalows change to more conservative bungalow setting in computer model
6. For commercial, the building type is conservatively assumed to be a pre 1970s office building, where the proposed development comprises houses, flat with living spaces changes setting in model accordingly
7. For classrooms consider increasing the dust loading fator in the 'Soil and Building Data' of the CLEA 1.04 model from 50 to 100µg m^{-3}
8. Based on vapour saturation limt as suggested by EA / [ ] model value
9. Lowest of o-, m- and p-xylene
10. Based on comparison of inhalation exposure with inhalation TDI
11. Based on comparison of oral, dermal, and inhalation exposure with the oral TDI
12. Based on a comparison of oral and dermal soil exposure with oral Index Dose only
13. Averaged over and based on lifetime exposure
14. Based on critical concentration for skin irritation in humans arising from contact with phenol in aqueous solution (number in brackets based on health effects following long term exposure for illustration)
15. NA: Not applicable

Adopted Soil Generic Assessment Criteria
Sandy loam with 1% SOM

Contaminants	Residential with home grown produce	Residential without home grown produce	Allotments	Commercial	Public open space near residential housing POS_{resi}	Public park POS_{park}
Metals						
Beryllium	*1.7*	*1.7*	*35*	*12*	*2.2*	*63*
Boron	*290*	*11,000*	*45*	*240,000*	*21,000*	*46,000*
Cadmium	**10**[13] 22	**85**[13] 150	**1.8** 3.9	**230** 410	*120* 220	*560* 880
Chromium III	*910*	*910*	*18,000*	*8,600*	*1,500*	*33,000*
Chromium VI	*6* 21	*6* 21	*1.8* 170	*33* 49	*7.7* 21	*220* 250
Lead	200	310	80	2,300	630	1,300
Mercury *(elemental)*	**1**	**1**	**26**	**26**	*16*	**26**[8] [*30*]
Mercury (inorganic)	**170**	**240**	**80**	**3600**	*120*	*240*
Nickel	*130*[10]	*180*[10]	*53*[11]	*980*[10]	*230*	*800*
Vanadium	*410*	*1200*	*91*	*9000*	*2000*	*5000*
Copper	*2400*	*7100*	*520*	*68000*	*12000*	*44000*
Zinc	*3700*	*40000*	*620*	*730000*	*81000*	*170000*
Semi-Metals and non-metals						
Arsenic	**32**[12] 37	**35**[12] 40	**43**[12] 49	**640**[12] 640	*79* 79	*170* 170
Antimony		***550***		***7500***	***1500***	***3300***
Selenium	**350**	**600**	**120**	**13000**	*1100*	*1800*
Inorganic chemicals						
Cyanide	34	34	34	34	34	34
Organic contaminants						
Aliphatic risk banded hydrocarbons - TPHCWG method						
$EC_{>5}$ - EC_6	*42*	*42*	*730*	*3200*	*570000*	*95000*
$EC_{>6}$ - EC_8	*100*	*100*	*2300*	*7800*	*600000*	*150000*
$EC_{>8}$ - EC_{10}	*27*	*27*	*320*	*2000*	*13000*	*14000*
EC_{10}-EC_{12}	*130*	*130*	*2200*	*9700*	*13000*	*21000*
EC_{12}-EC_{16}	*1100*	*1100*	*11000*	*59000*	*13000*	*25000*
$EC_{>16}$ - EC_{35}	*65000*	*65000*	*260000*	*1600000*	*250000*	*450000*
$EC>_{35}$ - EC_{44}	*65000*	*65000*	*260000*	*1600000*	*250000*	*450000*
Aromatic risk banded hydrocarbons - TPHCWG method						
$EC>_5$ - EC_7	*70*	*370*	*13*	*26000*	*56000*	*76000*
$EC>_7$ - EC_8	*130*	*860*	*22*	*56000*	*56000*	*87000*
$EC_{>8}$ - EC_{10}	*34*	*47*	*8.6*	*3500*	*5000*	*7200*
EC_{10} - EC_{12}	*74*	*250*	*13*	*16000*	*5000*	*9200*
EC_{12} - EC_{16}	*140*	*1800*	*23*	*36000*	*5100*	*10000*
$EC_{>16}$ - EC_{21}	*260*	*1900*	*46*	*28000*	*3800*	*7600*
$EC_{>21}$ - EC_{35}	*1100*	*1900*	*370*	*28000*	*3800*	*7800*
$EC>_{35}$ - EC_{44}	*1100*	*1900*	*370*	*28000*	*3800*	*7800*
Aliph + Arom EC >44-70	*1600*	*1900*	*1200*	*28000*	3800	7800
Aromatic						
Benzene	**0.08**	**0.3**	**0.017**	**28**	*72*	*90*
Ethyl benzene	**65**	**170**	**16**	**520**[8] [17000]	**520**[8] *[24000]*	**520**[8] *[17000]*
Toluene	**120**	**610**	**22**	**860**[8] [59000]	**860**[8] *[56000]*	**860**[8] *[87000]*
Xylene[9]	**41**	**53**	**28**	**480**[8] [69000]	**480**[8] *[41000]*	**480**[8] *[17000]*
Phenol	**180**	**310**	**66**	**760**[14] (31000)	**760**[14] *(10000)*	**760**[14] *(7600)*
Polycyclic Aromatic Hydrocarbons (PAH)						
Naphthalene	*2.3*	*2.3*	*4.1*	*190*	*4900*	*1200*
Acenaphthylene	*170*	*2900*	*28*	*83000*	*15000*	*29000*
Acenaphthene	*210*	*3000*	*34*	*84000*	*15000*	*29000*
Fluorene	*170*	*2800*	*27*	*63000*	*9900*	*20000*
Phenanthrene	*95*	*1300*	*15*	*22000*	*3100*	*6200*
Anthracene	*2400*	*31000*	*380*	*520000*	*74000*	*150000*
Fluoranthene	*280*	*1500*	*52*	*23000*	*3100*	*6300*
Pyrene	*620*	*3700*	*110*	*54000*	*7400*	*15000*
Benz(a)anthracene	*7.2*	*11*	*2.9*	*170*	*29*	*49*
Chrysene	*15*	*30*	*4.1*	*350*	*57*	*93*
Benzo(b)fluoranthene	*2.6*	*3.9*	*0.99*	*44*	*7.1*	*13*
Benzo(k)fluoranthene	*77*	*110*	*37*	*1200*	*190*	*370*
Benzo(a)pyrene	*2.2*	*3.2*	*0.97*	*35*	*5.7*	*11*
Indeno(123cd)pyrene	*27*	*45*	*9.5*	*500*	*82*	*150*
Dibenzo(ah)anthracene	*0.24*	*0.31*	*0.14*	*3.5*	*0.57*	*1.1*
Benzo(ghi)perylene	*320*	*360*	*290*	*3900*	*640*	*1400*
Chlorinated Aliphatic Hydrocarbons						
Vinyl chloride	*0.00064*	*0.00077*	*0.00055*	*0.059*	*3.5*	*4.8*
Trichloroethene (TCE)	*0.016*	*0.017*	*0.041*	*1.2*	*120*	*70*
1,1,1,2 Tetrachlorethane	*1.2*	*1.5*	*0.79*	*110*	*1400*	*1500*
Tetrachlorethene (PCE)	*0.18*	*0.18*	*0.65*	*19*	*1400*	*810*
1,1,1 Trichlorethane	*8.8*	*9*	*48*	*660*	*140000*	*57000*

Notes

1. All values above are in mg/kg
2. **Numbers in bold are SGVs or GAC that are derived based on SGV report input parameters**, *numbers in italics are S4ULs*, ***numbers in bold-italics are based on EIC/AGS/CL:AIRE numbers & input parameters*** and underlined numbers are C4SLs
3. Soil organic matter (SOM) is assumed to be 1% - DEFAULT VALUE
4. Soil type is assumed to be sandy loam - DEFAULT SOIL TYPE
5. For residential, the building type is conservatively assumed to be a small terrace house where the development includes bungalows change to more conservative bungalow setting in computer model
6. For commercial, the building type is conservatively assumed to be a pre 1970s office building, where the proposed development comprises houses, flat with living spaces changes setting in model accordingly
7. For classrooms consider increasing the dust loading fator in the 'Soil and Building Data' of the CLEA 1.04 model from 50 to 100µg m^{-3}
8. Based on vapour saturation limt as suggested by EA / [ ] model value
9. Lowest of o-, m- and p-xylene
10. Based on comparison of inhalation exposure with inhalation TDI
11. Based on comparison of oral, dermal, and inhalation exposure with the oral TDI
12. Based on a comparison of oral and dermal soil exposure with oral Index Dose only
13. Averaged over and based on lifetime exposure
14. Based on critical concentration for skin irritation in humans arising from contact with phenol in aqueous solution (number in brackets based on health effects following long term exposure for illustration)
15. NA: Not applicable

Tier 1 Thresholds

Water Contaminants: Initial Assessment of Risk

Introduction

The Generic Assessment Criteria (GAC) employed as Tier 1 Controlled Water Screening criteria are given in Tables 1 and 2. The more conservative available Drinking Water Standards (DWS) and Environmental Quality Standards (EQS) (Freshwater and Saltwater), applicable in England and Wales have been included in the tables.

The list of determinands is non-industry specific and it should be recognised that additional site specific determinands may need to be taken into account. The applicability of these criteria, with regard to the developed Conceptual Site Model, is discussed within the relevant section of the preceding report. Further details on individual GAC can be obtained in the referenced source legislation.

Generic Assessment Criteria

Table 1 – Inorganic Contaminant Controlled Waters Generic Assessment Criteria

Contaminant	Units	Hardness Banding (mg/l CaCO3)	EQS (Freshwater)	EQS (Saltwater)	EU DWS	WHO
Arsenic	µg/l	-	50	25	10	10
Boron	µg/l	-	2000	7000	1000	0.3
Cadmium	µg/l	<40	0.08	0.2	5	3
		40- <50	0.08			
		50- <100	0.09			
		100- <200	0.15			
		>200	0.25			
Chromium III	µg/l	-	4.7	-	50	50
Chromium VI	µg/l	-	3.4	0.6		
Copper	µg/l	-	1 bioavailable[i]	3.76 Where DOC[ii] ≤ 1mg	2000	2000
				3.76 + (2.677 x ((DOC/2)-0.5)) Where DOC[ii] >1mg/l		
Cyanide (Free)	µg/l	-	1	1		
Cyanide (Total)	µg/l	-	1	1	50	70
Iron	µg/l	-	1000	1000	200	300
Lead	µg/l		1.2	1.3	10	10
Mercury	µg/l	-	0.07[iii]	0.07[iii]	1	1
Nickel	µg/l	-	4 bioavailable[i]	8.6	20	70

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Contaminant	Units	Hardness Banding (mg/l CaCO3)	EQS (Freshwater)	EQS (Saltwater)	EU DWS	WHO
Selenium	µg/l	-	-	-	10	10
Sulphate	mg/l	-	400	-	250	-
Sulphide	µg/l	-	0.25	-	-	-
Zinc	µg/l	-	10.9 bioavailable[ii] + ABC[v]	6.8 dissolved[iV] + ABC	5000	3000

i - fraction likely to have toxic effect as determined using the UKTAG Metal Bioavailability Assessment Tool
ii - concentration of dissolved organic carbon in mg/l of the receiving water (as identified in the Conceptual Site Model)
iii - in absence on Annual Average the Maximum Allowable Concentration Used
iv - total dissolved as reported
V - Average Background Concentration (ABC) as listed in Part 2 Table 2 in Ref. 1.

Table 2 – Organic Contaminant Controlled Waters Generic Assessment Criteria

Contaminant	Units	EQS (Freshwater)	EQS (Saltwater)	EU DWS	WHO
Organics					
Phenol (total)	µg/l	7.7	7.7	0.5	-
MTBE	µg/l	-	-	-	15
Total Petroleum Hydrocarbons (TPH)					
Aliphatic C5-C6	µg/l	-	-	-	15000
Aliphatic C6-C8	µg/l	-	-	-	15000
Aliphatic C8-C10	µg/l	-	-	-	300
Aliphatic C10-C12	µg/l	-	-	-	300
Aliphatic C12-C16	µg/l	-	-	-	300
Aliphatic C16-C21	µg/l	-	-	-	300
Aliphatic C21-C35	µg/l	-	-	-	300
Aromatic C6-C7 (benzene)	µg/l	10	8	1	10
Aromatic C7-C8 (toluene)	µg/l	74	74	-	700
Aromatic C8-C10 (ethylbenzene)	µg/l	20	20	-	300
Aromatic C10-C12	µg/l	-	-	-	100
Aromatic C12-C16	µg/l	-	-	-	100
Aromatic C16-C21	µg/l	-	-	-	90
Aromatic C21-C35	µg/l	-	-	-	90
Total Hydrocarbons (Dissolved / Emulsion)	µg/l	-	-	10 (revoked)	300

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Contaminant	Units	EQS (Freshwater)	EQS (Saltwater)	EU DWS	WHO
BTEX Compounds					
Benzene	µg/l	10	8	1	10
Toluene	µg/l	74	74	-	700
Ethyl-benzene	µg/l	20	20	-	300
Xylene (o+p+m)	µg/l	30	30	-	-
Polycyclic Aromatic Hydrocarbons (PAH)					
Anthracene	µg/l	0.1	0.1	-	-
Benzo(a)pyrene	µg/l	0.00017	0.00017	0.01	0.01
Napthalene	µg/l	2	2	-	-
PAHs Sum of four- benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, indeno(1,2,3-c,d)pyrene	µg/l	-	-	0.1	-

References

1 The Water Framework Directive, (Standards and Classification) Directions (England and Wales) [2015]
2 Council Directive 76/464/EEC, Council Directive on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (Dangerous Substances Directive) [1976]
3 Council Directive 98/83/EC on the quality of water intented for human consumption [1998]
4 World Health Organisation (WHO), Guidelines for Drinking Water Quality. Third edition [2004]

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GAS MONITORING LOG SHEET

Project:	Jersey Wharf	**Date:**	27/02/2023
Job Number:	B077879	**Visit:**	1
Client:	Mace	**Weather:**	Overcast, dry
Barometric State:	Rising	**Ground Conditions:**	Slightly damp

Borehole Reference	Barometric Pressure mb	Flow l/hr		Methane %		Carbon Dioxide %		Oxygen %	Hydrogen Sulphide ppm	Carbon Monoxide ppm	Water Level m bgl	Borehole Base m bgl	Note
		Max	SS	Max	SS	Max	SS						
WS-C6	1024	0.0	0.0	0.0	0.0	2.2	2.1	18.6	0	10	1.01	3.71	
WS-C7	1024	0.0	0.0	0.0	0.0	5.2	5.2	15.8	0	10	DRY	1.04	
WS-C9	1024	0.0	0.0	0.0	0.0	1.8	1.8	19.4	0	14	2.05	4.91	
MAX		0.0	0.0	0.0	0.0	5.2	5.2	19.4	0	14			

Notes

Logged by

LW

1% gas volume = 10,000 ppm
Flow rate, methane and carbon dioxide reported as 'maximum' (max) and 'steady state' (SS) readings.
All other gases recorded at 'steady state' unless otherwise stated

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GAS MONITORING LOG SHEET

Project:	Jersey Wharf	**Date:**	03/03/2023
Job Number:	B077879	**Visit:**	2
Client:	Mace	**Weather:**	Sunny, dry
Barometric State:	Falling	**Ground Conditions:**	Slightly damp

Borehole Reference	Barometric Pressure mb	Flow l/hr		Methane %		Carbon Dioxide %		Oxygen %	Hydrogen Sulphide ppm	Carbon Monoxide ppm	Water Level m bgl	Borehole Base m bgl	Note
		Max	SS	Max	SS	Max	SS						
WS-C6	1021	0.0	0.0	0.0	0.0	0.8	0.8	20.00	0	0	1.1	3.70	1
WS-C7	1020	0.0	0.0	0.0	0.0	5.6	5.6	15.00	0	0	DRY	1.08	
WS-C9	1022	0.0	0.0	0.0	0.0	0.9	0.7	19.80	0	0	2.05	4.94	1
MAX		0.0	0.0	0.0	0.0	5.6	5.6	20.0	0	0			

Notes

1 3x well volume purged

Logged by

LW & MH

1% gas volume = 10,000 ppm
Flow rate, methane and carbon dioxide reported as 'maximum' (max) and 'steady state' (SS) readings.
All other gases recorded at 'steady state' unless otherwise stated

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GAS MONITORING LOG SHEET

Project:	Jersey Wharf	**Date:**	09/03/2023
Job Number:	B077879	**Visit:**	3
Client:	Mace	**Weather:**	Snow
Barometric State:	Falling	**Ground Conditions:**	Wet

Borehole Reference	Barometric Pressure mb	Flow l/hr		Methane %		Carbon Dioxide %		Oxygen %	Hydrogen Sulphide ppm	Carbon Monoxide ppm	Water Level m bgl	Borehole Base m bgl	Note
		Max	SS	Max	SS	Max	SS						
WS-C6	987	0.0	0.0	0.0	0.0	5.3	5.3	15.2	0	0	1.23	3.72	1
WS-C7	989	0.0	0.0	0.0	0.0	1.6	1.6	19.2	0	0	Dry	1.09	
WS-C9	987	56.6	0.0	0.0	0.0	1.6	1.6	18.9	0	0	2.48	4.94	
MAX		56.6	0.0	0.0	0.0	5.3	5.3	19.2	0	0			

Notes

1 Gas flow rate of 0 achieved after 1:40 minutes

Logged by

JP

1% gas volume = 10,000 ppm
Flow rate, methane and carbon dioxide reported as 'maximum' (max) and 'steady state' (SS) readings.
All other gases recorded at 'steady state' unless otherwise stated

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GAS MONITORING LOG SHEET

Project:	Jersey Wharf	**Date:**	16/03/2023
Job Number:	B077879	**Visit:**	4
Client:	Mace	**Weather:**	Overcast, raining
Barometric State:	Rising	**Ground Conditions:**	Damp

Borehole Reference	Barometric Pressure mb	Flow l/hr		Methane %		Carbon Dioxide %		Oxygen %	Hydrogen Sulphide ppm	Carbon Monoxide ppm	Water Level m bgl	Borehole Base m bgl	Note
		Max	SS	Max	SS	Max	SS						
WS-C6	994	0.0	0.0	0.0	0.0	1.8	1.8	18.7	0	0	1.22	3.72	
WS-C7	993	0.0	0.0	0.0	0.0	4.9	4.9	13.9	0	0	DRY	1.07	
WS-C9	993	19.6	0.0	0.0	0.0	1.6	1.4	19.6	0	0	2.46	4.94	1
0													
0													
MAX		19.6	0.0	0.0	0.0	4.9	4.9	19.6	0	0			

Notes

1 Gas flow rate of 0 reached after 3:00 minutes.

Logged by

LW

1% gas volume = 10,000 ppm
Flow rate, methane and carbon dioxide reported as 'maximum' (max) and 'steady state' (SS) readings.
All other gases recorded at 'steady state' unless otherwise stated

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GAS MONITORING LOG SHEET

Project:	Jersey Wharf	**Date:**	22.03.23
Job Number:	B077879	**Visit:**	5
Client:	Mace	**Weather:**	Sunny
Barometric State:	Steady	**Ground Conditions:**	Damp

Borehole Reference	Barometric Pressure mb	Flow l/hr		Methane %		Carbon Dioxide %		Oxygen %	Hydrogen Sulphide ppm	Carbon Monoxide ppm	Water Level m bgl	Borehole Base m bgl	Note
		Max	SS	Max	SS	Max	SS						
WS-C6	989	0.0	0.0	0.0	0.0	1.3	1.3	19.0	0	0	0.93	3.73	
WS-C7	988	0.0	0.0	0.0	0.0	2.5	2.5	17.1	0	0	DRY	1.07	
WS-C9	988	0.0	0.0	0.0	0.0	0.9	0.6	19.8	0	0	2.54	4.97	
0													
0													
0													
MAX		0.0	0.0	0.0	0.0	2.5	2.5	19.8	0	0			

Notes

Logged by

LW

1% gas volume = 10,000 ppm
Flow rate, methane and carbon dioxide reported as 'maximum' (max) and 'steady state' (SS) readings.
All other gases recorded at 'steady state' unless otherwise stated

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GAS MONITORING LOG SHEET

Project:	Jersey Wharf	**Date:**	27/03/2023
Job Number:	B077879	**Visit:**	6
Client:	Mace	**Weather:**	Sunny
Barometric State:	Rising	**Ground Conditions:**	Damp

Borehole Reference	Barometric Pressure mb	Flow l/hr		Methane %		Carbon Dioxide %		Oxygen %	Hydrogen Sulphide ppm	Carbon Monoxide ppm	Water Level m bgl	Borehole Base m bgl	Note
		Max	SS	Max	SS	Max	SS						
WS-C6	1018	0.0	0.0	0.0	0.0	0.2	0.2	20.0	0	0	0.98	3.71	
WS-C7	1019	0.0	0.0	0.0	0.0	0.2	0.2	20.0	0	0	Dry	1.08	
WS-C9	1019	0.0	0.0	0.0	0.0	0.2	0.2	20.0	0	0	2.45	4.93	
0													
0													
0													
MAX		0.0	0.0	0.0	0.0	0.2	0.2	20.0	0	0			

Notes

Logged by

JP

1% gas volume = 10,000 ppm
Flow rate, methane and carbon dioxide reported as 'maximum' (max) and 'steady state' (SS) readings.
All other gases recorded at 'steady state' unless otherwise stated